SERVICE MANUAL
ORIGINAL

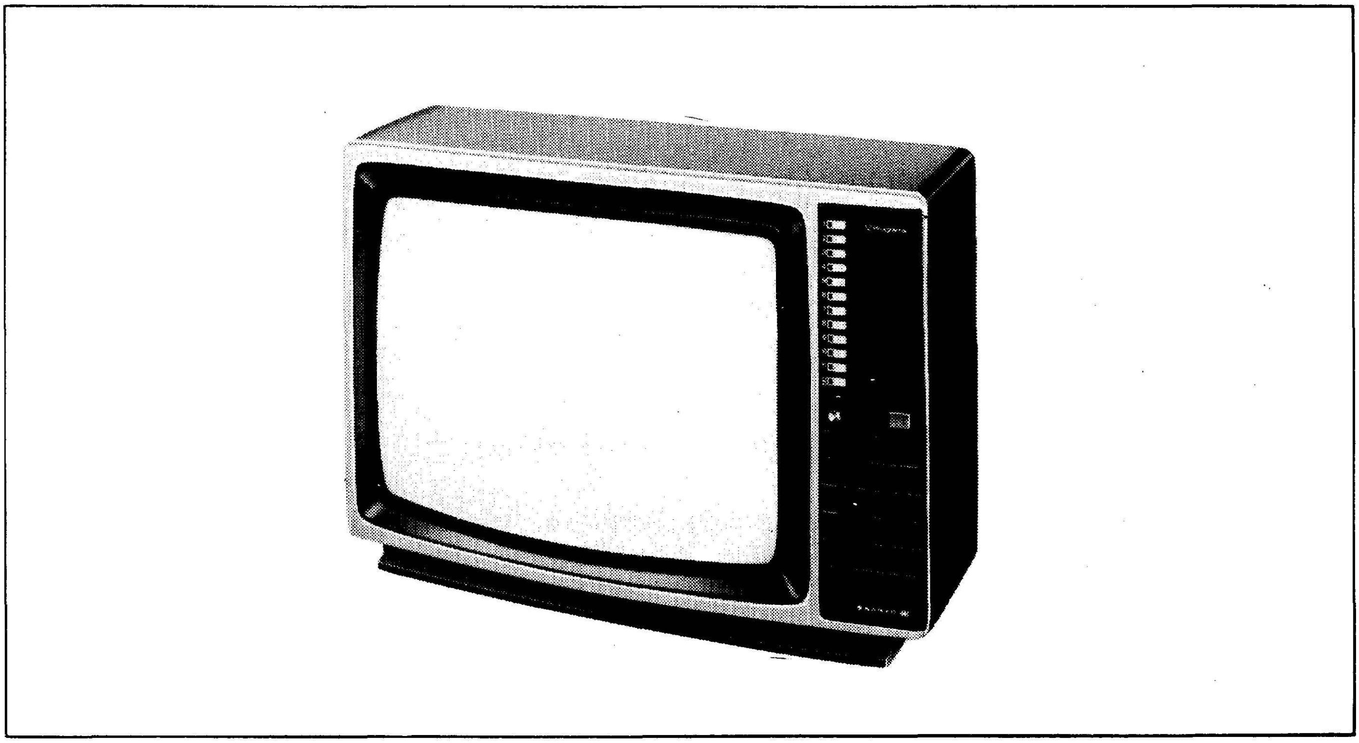
SANYO

COLOUR TELEVISION

Chassis No. 80P-B20-B2LK00

CTP6123

Chassis number is printed in the rating plate affixed to the cabinet back.



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For detail information (circuit analysis and troubleshooting techniques), refer to the training manual of 80P chassis.

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SANYO ELECTRIC CO., LTD.
SANYO ELECTRIC TRADING CO., LTD.

SAFETY PRECAUTIONS

1. An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set.
2. Comply with all caution and safety-related notes provided on cabinet back, inside the cabinet, on the chassis or the picture tube.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as, control knobs, adjustment covers or shields, barriers, isolation resistor-capacitor networks etc.

   Before returning any television to the customer, the service technician must be sure that it is completely safe to operate without danger of electrical shock.

X-RADIATION PRECAUTION

The primary source of X-RADIATION in television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specified limit. Refer to this service manual, high voltage adjustment for specific high voltage limits. If high voltage exceeds specified limits, take necessary corrective action. Carefully follow the instructions for +B1 volt power supply adjustment , and high voltage adjustment to maintain the high voltage within the specified limits.

PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by mark ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. It is particularly recommended that only parts designated on the parts list in this manual be used for component replacement designated by mark ⚠ No deviations from resistance wattage or voltage ratings may be made for replacement items designated by mark ⚠.

SPECIFICATIONS

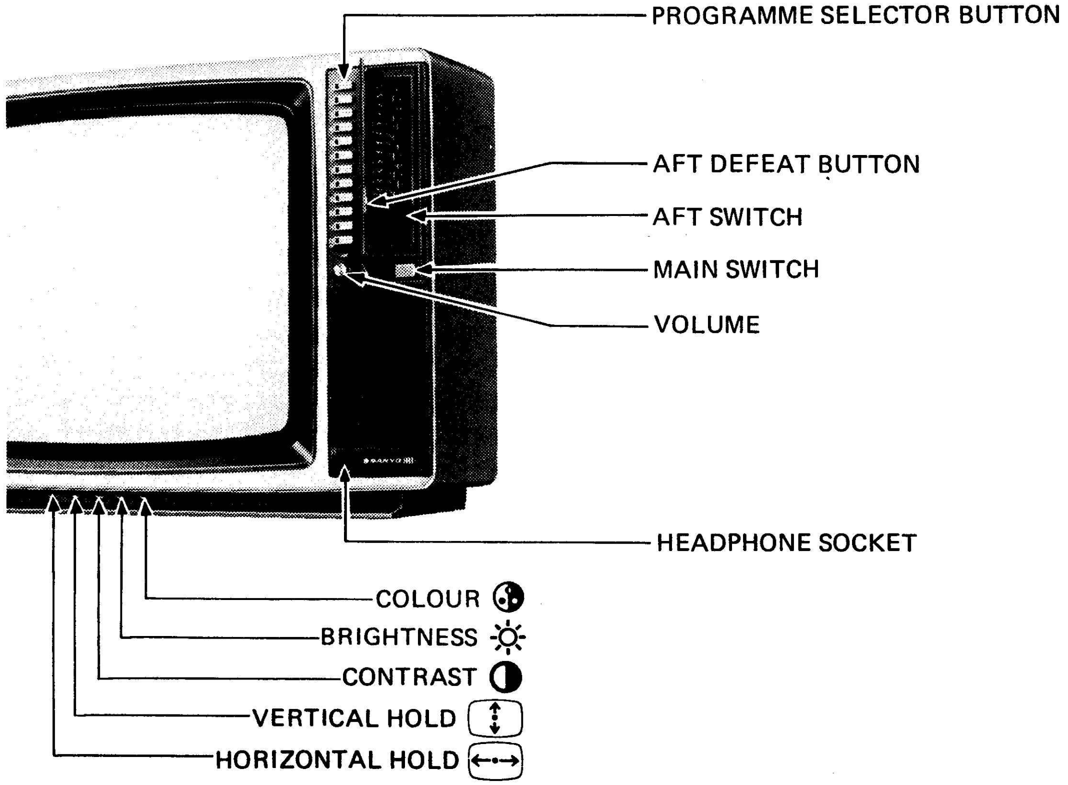
Television system	625 line, PAL colour
Power Source	AC 220V, 50Hz
Power consumption	78W
Receiving channels	VHF ch A-I UHF ch 21-69
Aerial input impedance	75 ohms
Intermediate frequencies	Video 39.5MHz Sound 33.5MHz Colour 35.07MHz
Audio output	3.0W, 10% distortion
Speaker	12 x 8cm, 4 ohm

Picture tube	51cm diagonal, 90 degree Type No. 510VAB22
High voltage	24kV at Zero beam
Semiconductors	21 Transistors 4 ICs 51 Diodes
Dimensions	Width 510mm Height 427mm Depth 442mm
Weight	21kg

SUMMARY

20" COMPACT COLOUR TV

All solid state circuitry with 4 ICs and 21 transistors for stable quality, less power consumption and high reliability. Simplified chassis construction with 1 main circuit board for easy access and servicing. In-line gun, slotted mask black matrix picture tube with 90° deflection angle. Convergence-free tube system. Instant-Start for instant picture and sound in standby mode. With Automatic Fine Tuning (AFT). Twelve push channel selector buttons. All special channels can be received by all channel varactor tuner.


PROGRAMME SELECTOR BUTTON
AFT DEFEAT BUTTON
AFT SWITCH
MAIN SWITCH
VOLUME
HEADPHONE SOCKET
COLOUR
BRIGHTNESS
CONTRAST
VERTICAL HOLD
HORIZONTAL HOLD

CHASSIS DISCRIPTION

Described below are the characteristics of this model. Adequate knowledge about will enhance the understanding of the chassis and help the service engineer in the execution of his work.

TUNER:

Solid state all channel varactor tuner is employed on this model. Any programme of VHF A ~ I and UHF 21 ~ 69 can be tuned by touch tuning system.

VIF & SIF:

In the VIF and SIF circuit of the former 79P chassis, signals were processed from the LA1357N of the VIF circuitry to LA1365 of the SIF circuitry. In this chassis, all signals of the VIF and SIF circuitry are processed by one IC, M51356P.

SOUND:

The audio amplifier IC is employed in this chassis. The preamplifier, the sound drive, and the output amplifier are all incorporated into LA4220.

VIDEO & CHROMA:

In the video and chroma circuitry of the former 79P chassis, signals were processed by the M51381P IC of the video circuitry and the TA7193P IC of the chroma circuitry. In the new 80P chassis (this chassis), all signals of the video and chroma circuitry are processed by one IC, M51393P.

SYNC., VERT. OSC. & HORIZ. OSC.:

The deflection IC for this chassis is the newly developed LA7800. Comparison with the LA1460 used in the 79P chassis reveals the following points:

1. It is a 16-pin DIL. (The LA1460 was a 22-pin DIL.)
2. A 12V stabilization circuit is built in.
3. There is a smaller number of parts in the sync-separation stage.

VERTICAL OUTPUT:

The main feature of the vertical output circuitry of the 80P chassis is that it employs a two-power-source pump-up system. This system is employed in order to eliminate the unnecessary electric power which is supplied in the first half of the scanning period in the conventional one-power-source system.

HORIZONTAL DRIVE:

The horizontal-drive circuit current-amplifies the signal generated by the horizontal-oscillation stage inside the deflection IC (IC401), and provides sufficient switching for horizontal-output transistor Q451.

HORIZONTAL OUTPUT:

The output transistor utilized in the horizontal output circuitry is a built-in damper diode type of transistor.

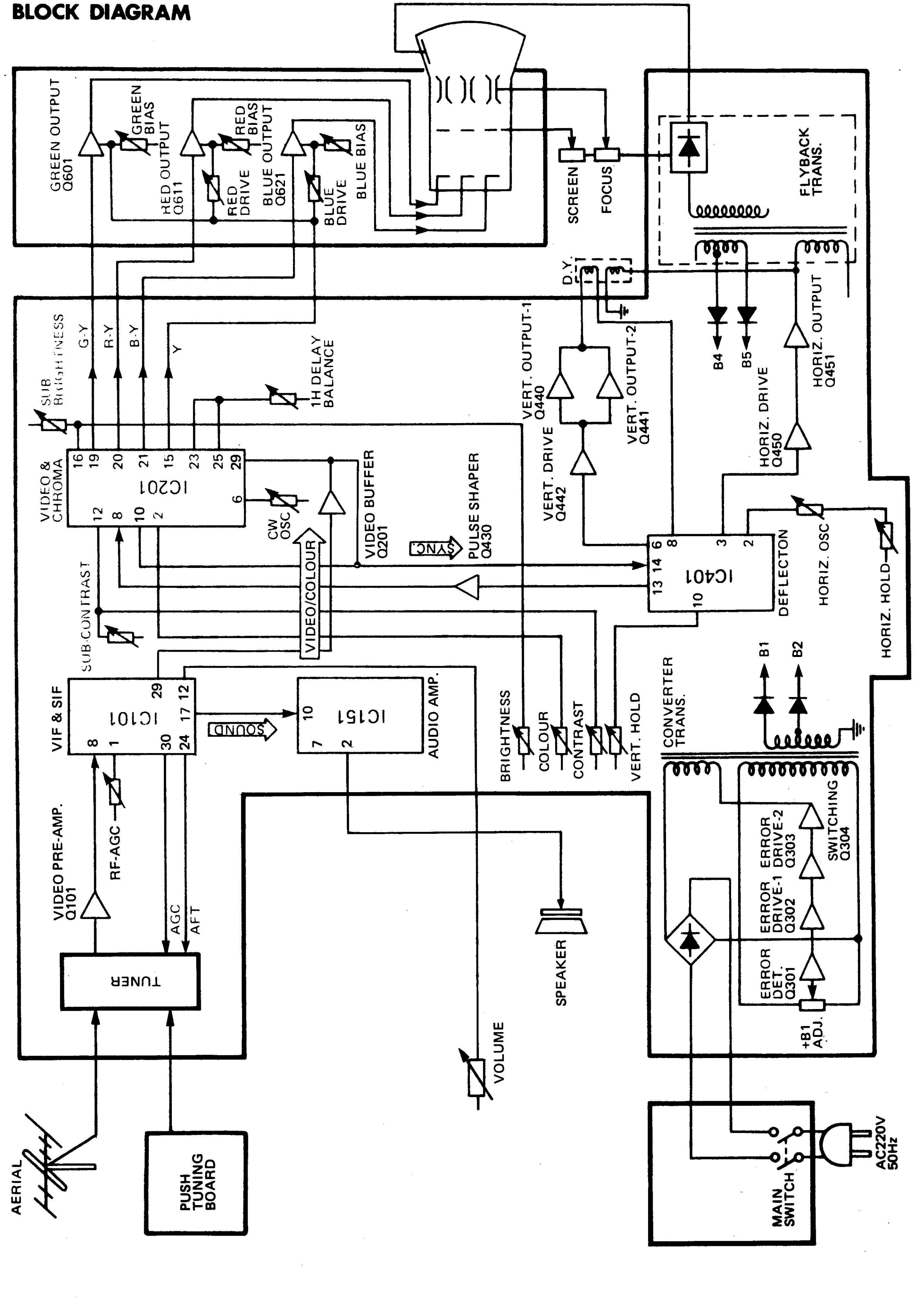
The FBT (flyback transformer) is a built-in high-voltage block in which the high-voltage block and the FBT are an integrated unit. The 5th harmonic tuning system is used in the FBT. The high-voltage pulses produced inside the FBT are rectified by the double-voltage rectifier circuit (doubler system) in order to obtain the specified high voltage.

The screen voltage is taken from the focus resistor.

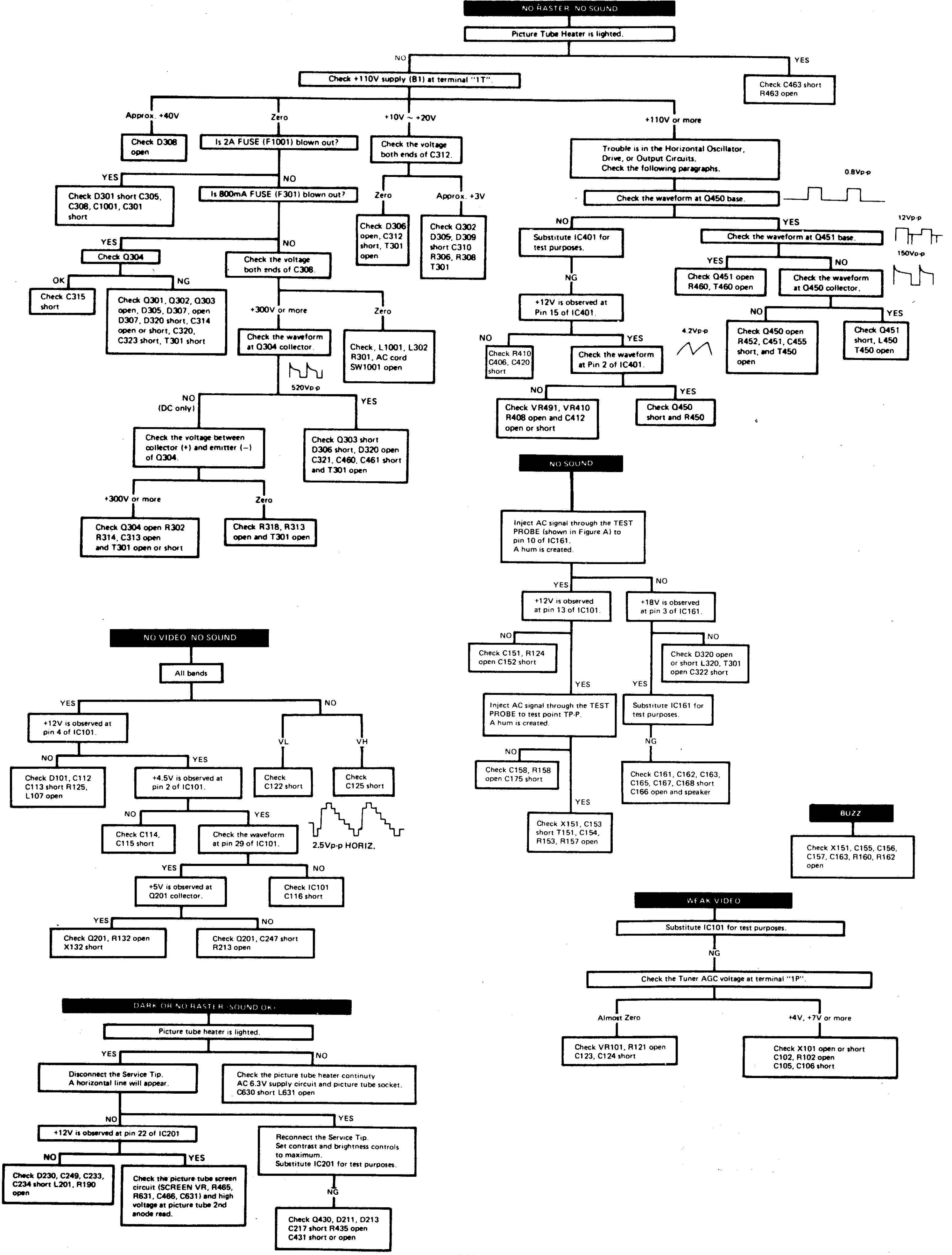
POWER SUPPLY:

The power-supply circuitry of the 80P chassis (this chassis), because it is the switching regulator type and adopts the converter system, reduces the amount of power loss, and is the insulated type. It was especially designed with the objective of receiving approval as an IEC standard class II type.

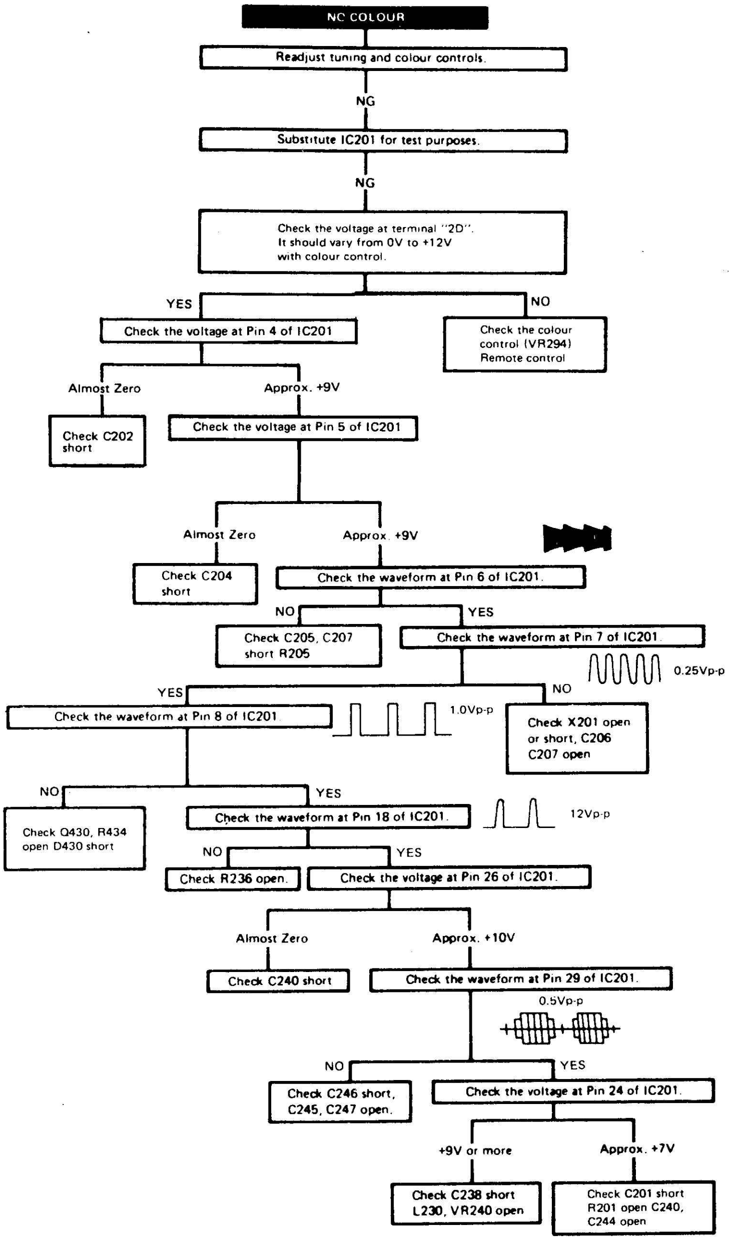
BLOCK DIAGRAM


GREEN OUTPUT Q601
GREEN BIAS
RED OUTPUT Q611
RED BIAS
RED DRIVE
BLUE OUTPUT Q621
BLUE BIAS
BLUE DRIVE
SCREEN
FOCUS
FLYBACK TRANS.
D.Y.
B4
B5
HORIZ. OUTPUT Q451
HORIZ. DRIVE Q450
VERT. OUTPUT-1 Q440
VERT. OUTPUT-2 Q441
VERT. DRIVE Q442
SUB BRIGHTNESS
G-Y
R-Y
B-Y
Y
1H DELAY BALANCE
VIDEO & CHROMA
IC201
16
19
20
21
15
23
25
29
12
8
10
2
6
CW OSC
VIDEO BUFFER Q201
VIDEO/COLOUR
SYNC.
PULSE SHAPER Q430
IC401
6
8
3
2
13
14
10
DEFLECTON
HORIZ. OSC
HORIZ. HOLD
SUB-CONTRAST
VIF & SIF
IC101
8
1
30
24
29
12
17
SOUND
IC151
10
7
2
AUDIO AMP.
BRIGHTNESS
COLOUR
CONTRAST
VERT. HOLD
CONVERTER TRANS.
B1
B2
VIDEO PRE-AMP. Q101
RF-AGC
AGC
AFT
TUNER
SPEAKER
VOLUME
ERROR DET. Q301
ERROR DRIVE-1 Q302
ERROR DRIVE-2 Q303
SWITCHING Q304
+B1 ADJ.
AERIAL
PUSH TUNING BOARD
MAIN SWITCH
AC220V 50Hz

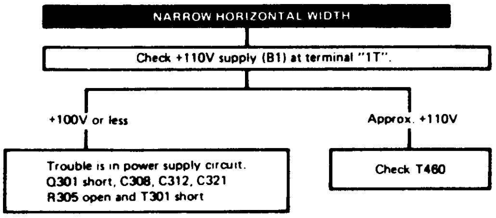
TROUBLESHOOTING CHARTS


NO RASTER NO SOUND
Picture Tube Heater is lighted.
NO
YES
Check C463 short R463 open
Check +110V supply (B1) at terminal "1T".
Approx. +40V
Zero
+10V ~ +20V
+110V or more
Check D308 open
Is 2A FUSE (F1001) blown out?
Check the voltage both ends of C312.
Trouble is in the Horizontal Oscillator, Drive, or Output Circuits. Check the following paragraphs.
YES
NO
Check D301 short C305, C308, C1001, C301 short
Is 800mA FUSE (F301) blown out?
Zero
Approx. +3V
Check D306 open, C312 short, T301 open
Check Q302 D305, D309 short C310 R306, R308 T301
Check the waveform at Q450 base.
0.8Vp-p
YES
NO
Check Q304
Check the voltage both ends of C308.
OK
NG
Check C315 short
Check Q301, Q302, Q303 open, D305, D307, open D307, D320 short, C314 open or short, C320, C323 short, T301 short
+300V or more
Zero
Check the waveform at Q304 collector.
520Vp-p
Check, L1001, L302 R301, AC cord SW1001 open
NO (DC only)
YES
Check the voltage between collector (+) and emitter (–) of Q304.
Check Q303 short D306 short, D320 open C321, C460, C461 short and T301 open
+300V or more
Zero
Check Q304 open R302 R314, C313 open and T301 open or short
Check R318, R313 open and T301 open
NO
YES
Substitute IC401 for test purposes.
Check the waveform at Q451 base.
12Vp-p
150Vp-p
NG
YES
NO
Check Q451 open R460, T460 open
Check the waveform at Q450 collector.
+12V is observed at Pin 15 of IC401.
NO
YES
Check Q450 open R452, C451, C455 short, and T450 open
Check Q451 short, L450 T450 open
NO
YES
4.2Vp-p
Check R410 C406, C420 short
Check the waveform at Pin 2 of IC401.
NO
YES
Check VR491, VR410 R408 open and C412 open or short
Check Q450 short and R450
NO SOUND
Inject AC signal through the TEST PROBE (shown in Figure A) to pin 10 of IC161. A hum is created.
YES
NO
+12V is observed at pin 13 of IC101.
+18V is observed at pin 3 of IC161.
NO
NO
Check C151, R124 open C152 short
Check D320 open or short L320, T301 open C322 short
YES
YES
Inject AC signal through the TEST PROBE to test point TP-P. A hum is created.
Substitute IC161 for test purposes.
NO
NG
Check C158, R158 open C175 short
Check C161, C162, C163, C165, C167, C168 short C166 open and speaker
YES
Check X151, C153 short T151, C154, R153, R157 open
BUZZ
Check X151, C155, C156, C157, C163, R160, R162 open
NO VIDEO NO SOUND
All bands
YES
NO
+12V is observed at pin 4 of IC101.
VL
VH
NO
YES
Check D101, C112 C113 short R125, L107 open
+4.5V is observed at pin 2 of IC101.
Check C122 short
Check C125 short
NO
YES
Check C114, C115 short
Check the waveform at pin 29 of IC101.
2.5Vp-p HORIZ.
YES
NO
+5V is observed at Q201 collector.
Check IC101 C116 short
YES
NO
Check Q201, R132 open X132 short
Check Q201, C247 short R213 open
WEAK VIDEO
Substitute IC101 for test purposes.
NG
Check the Tuner AGC voltage at terminal "1P".
Almost Zero
+4V, +7V or more
Check VR101, R121 open C123, C124 short
Check X101 open or short C102, R102 open C105, C106 short
DARK OR NO RASTER (SOUND OK)
Picture tube heater is lighted.
YES
NO
Disconnect the Service Tip. A horizontal line will appear.
Check the picture tube heater continuity AC 6.3V supply circuit and picture tube socket. C630 short L631 open
NO
YES
+12V is observed at pin 22 of IC201
Reconnect the Service Tip. Set contrast and brightness controls to maximum. Substitute IC201 for test purposes.
NO
YES
NG
Check D230, C249, C233, C234 short L201, R190 open
Check the picture tube screen circuit (SCREEN VR, R465, R631, C466, C631) and high voltage at picture tube 2nd anode read.
Check Q430, D211, D213 C217 short R435 open C431 short or open

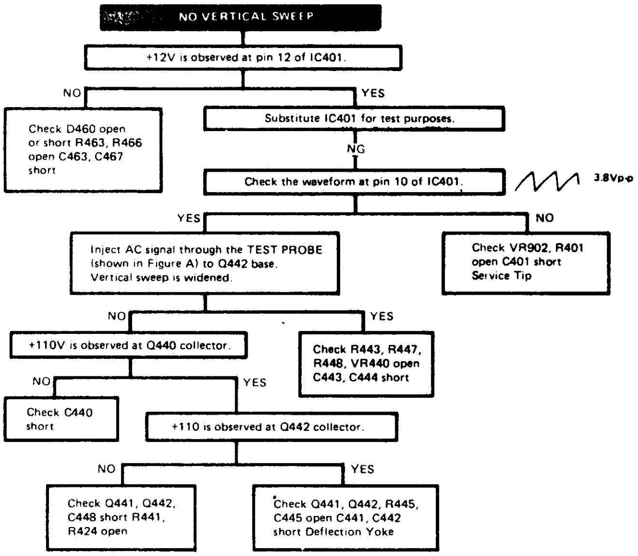
NO COLOUR


Readjust tuning and colour controls.
NG
Substitute IC201 for test purposes.
NG
Check the voltage at terminal "2D". It should vary from 0V to +12V with colour control.
YES
NO
Check the voltage at Pin 4 of IC201
Check the colour control (VR294) Remote control
Almost Zero
Approx. +9V
Check C202 short
Check the voltage at Pin 5 of IC201
Almost Zero
Approx. +9V
Check C204 short
Check the waveform at Pin 6 of IC201.
NO
YES
Check C205, C207 short R205
Check the waveform at Pin 7 of IC201.
0.25Vp-p
YES
NO
Check the waveform at Pin 8 of IC201
1.0Vp-p
Check X201 open or short, C206 C207 open
NO
YES
Check Q430, R434 open D430 short
Check the waveform at Pin 18 of IC201.
12Vp-p
NO
YES
Check R236 open.
Check the voltage at Pin 26 of IC201.
Almost Zero
Approx. +10V
Check C240 short
Check the waveform at Pin 29 of IC201.
0.5Vp-p
NO
YES
Check C246 short, C245, C247 open.
Check the voltage at Pin 24 of IC201.
+9V or more
Approx. +7V
Check C238 short L230, VR240 open
Check C201 short R201 open C240, C244 open

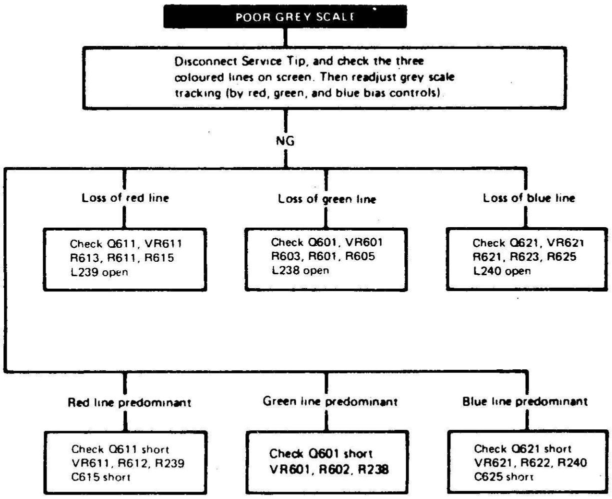
NARROW HORIZONTAL WIDTH


Check +110V supply (B1) at terminal "1T".
+100V or less
Approx. +110V
Trouble is in power supply circuit. Q301 short, C308, C312, C321 R305 open and T301 short
Check T460

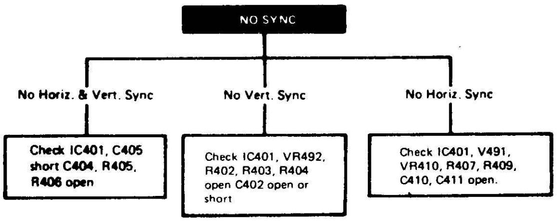
NO VERTICAL SWEEP


+12V is observed at pin 12 of IC401.
NO
YES
Check D460 open or short R463, R466 open C463, C467 short
Substitute IC401 for test purposes.
NG
Check the waveform at pin 10 of IC401.
3.8Vp-p
YES
NO
Inject AC signal through the TEST PROBE (shown in Figure A) to Q442 base. Vertical sweep is widened.
Check VR902, R401 open C401 short Service Tip
NO
YES
+110V is observed at Q440 collector.
Check R443, R447, R448, VR440 open C443, C444 short
NO
YES
Check C440 short
+110 is observed at Q442 collector.
NO
YES
Check Q441, Q442, C448 short R441, R424 open
Check Q441, Q442, R445, C445 open C441, C442 short Deflection Yoke

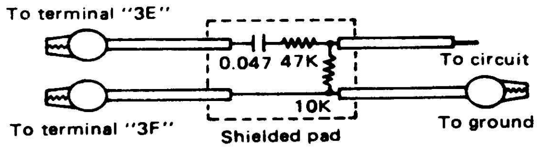
POOR GREY SCALE


Disconnect Service Tip, and check the three coloured lines on screen. Then readjust grey scale tracking (by red, green, and blue bias controls).
NG
Loss of red line
Loss of green line
Loss of blue line
Check Q611, VR611 R613, R611, R615 L239 open
Check Q601, VR601 R603, R601, R605 L238 open
Check Q621, VR621 R621, R623, R625 L240 open
Red line predominant
Green line predominant
Blue line predominant
Check Q611 short VR611, R612, R239 C615 short
Check Q601 short VR601, R602, R238
Check Q621 short VR621, R622, R240 C625 short

NO SYNC


No Horiz. & Vert. Sync
No Vert. Sync
No Horiz. Sync
Check IC401, C405 short C404, R405, R406 open
Check IC401, VR492, R402, R403, R404 open C402 open or short
Check IC401, V491, VR410, R407, R409, C410, C411 open.

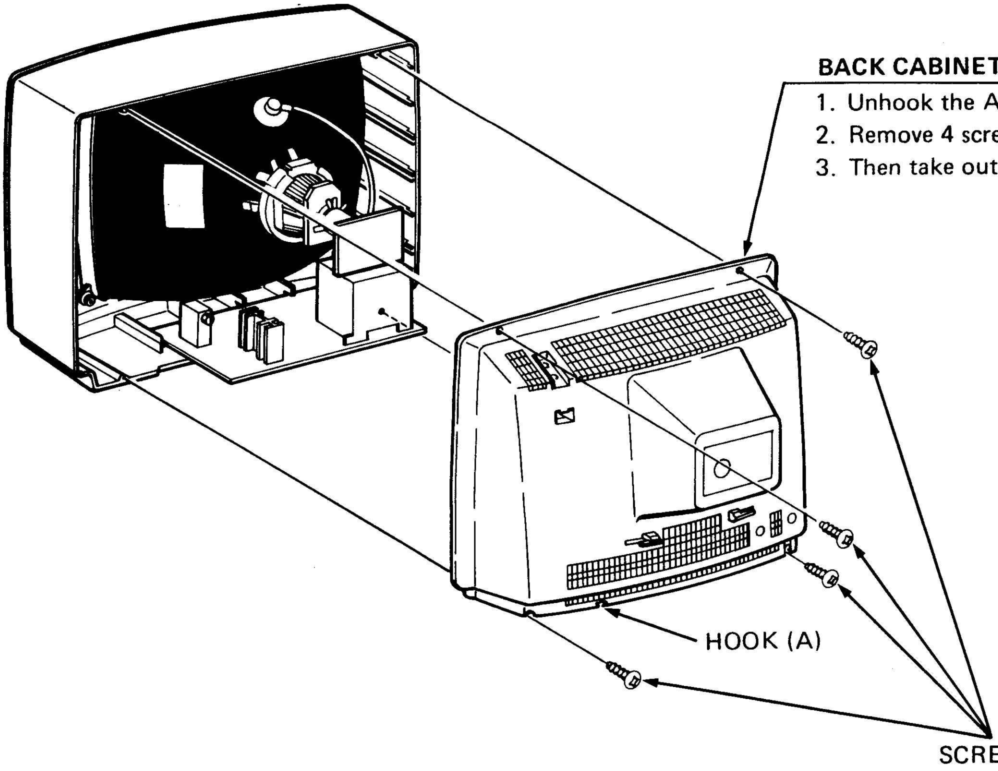
TEST PROBE


To terminal "3E"
0.047
47K
10K
To circuit
To terminal "3F"
Shielded pad
To ground

The AC signals are taken from AC 220V line on main board terminals "3E" and "3F", and attenuated Test probe, about 24V AC is obtained at end of probe.

Figure A

DISASSEMBLY

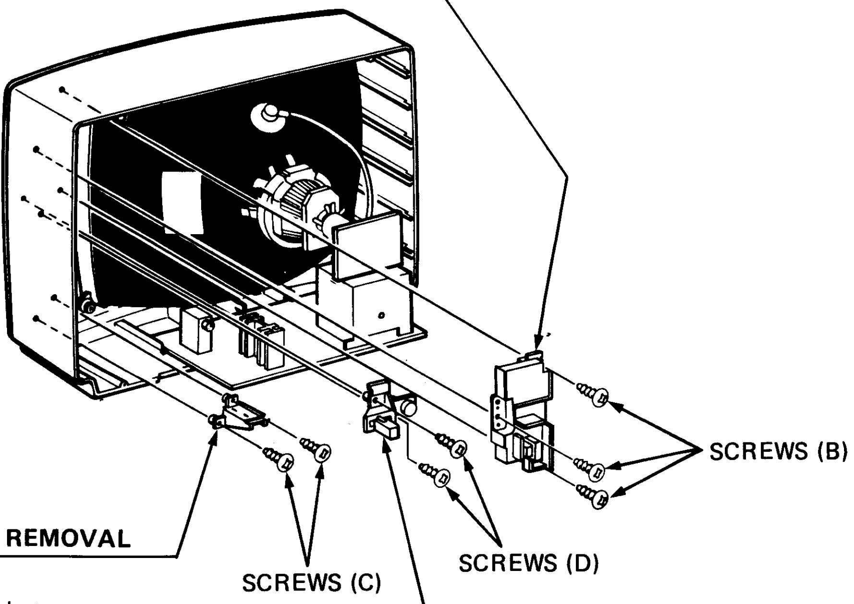

HOOK (A)
SCREWS (A)

BACK CABINET REMOVAL

1. Unhook the AC cord at hook (A).
2. Remove 4 screws (A).
3. Then take out the back cabinet.

TUNING ASS'Y BRACKET REMOVAL

1. Remove 3 screws (B).
2. Then draw out this bracket.

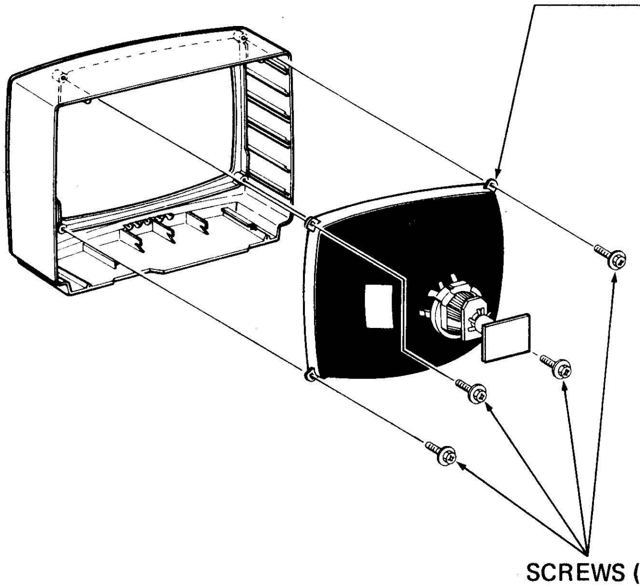

SCREWS (B)
SCREWS (C)
SCREWS (D)

HEADPHONE BRACKET REMOVAL

1. Remove 2 screws (C).
2. Then draw out this bracket.

SWITCH BRACKET REMOVAL

1. Remove 2 screws (D).
2. Then draw out this bracket.



PICTURE TUBE REMOVAL

Caution; Do not disturb the deflection yoke or magnet assembly on CRT neck.

Care must be taken to keep these assemblies intact.

Discharge picture tube by shorting the anode connection to chassis ground. (Not cabinet or other mounting parts).

1. Remove the cabinet back and chassis.
2. Place the cabinet face down on a soft surface.
3. Remove 4 screws (E).
4. Gently lift out the picture tube and place it on a soft surface.
5. Install replacement picture tube in reverse order.

SERVICE CONTROL ADJUSTMENTS

SUB-BRIGHTNESS ADJUSTMENT

NOTE: +110V power supply, AGC and grey scale tracking should be adjusted before attempting this adjustment.

1. Tune the receiver to cross hatch pattern.
2. Set brightness to maximum and colour and contrast to minimum.
3. Connect D.C. meter between test points "TP-H" (+ lead) and "TP-G" (– lead).
4. Adjust VR230 for 0.1V.

VERTICAL SIZE ADJUSTMENT

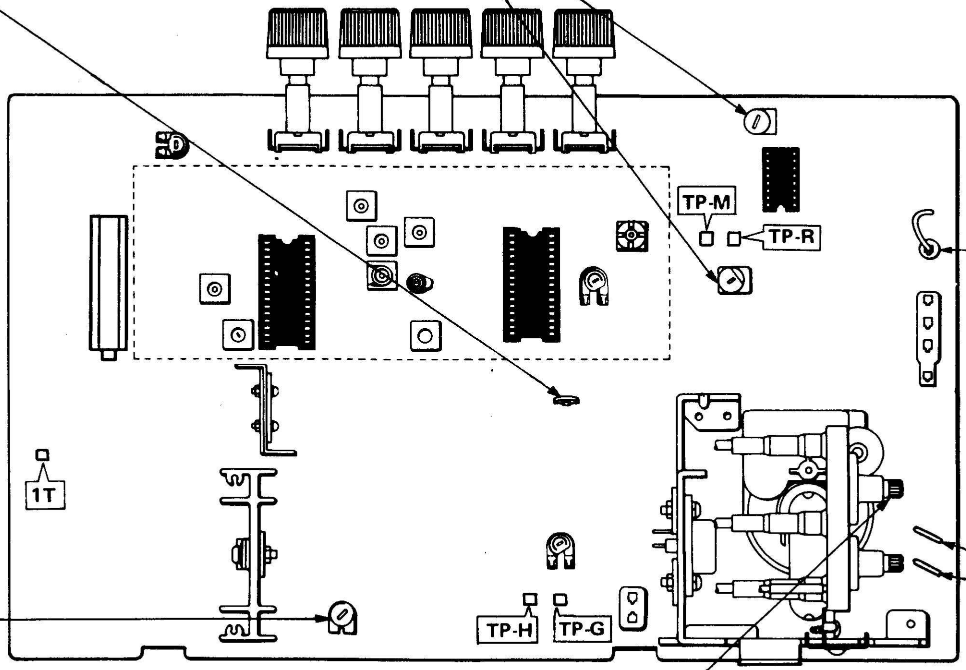
1. Tune the receiver to circular pattern.
2. Adjust VR440 to obtain proper picture.

HORIZONTAL OSCILLATION ADJUSTMENT

1. Set horizontal hold (VR491) to mechanical centre of its range.
2. Connect a short jumper between test points "TP-M" and "TP-R".
3. Adjust VR410 to momentarily synchronize picture.

VERTICAL CENTRING ADJUSTMENT

1. Set vertical and horizontal hold controls for a properly synchronized picture.
2. Vertical centring can be adjusted by connecting vertical tip to anyone of three terminals.



FOCUS ADJUSTMENT

Adjust focus control on the right side of the chassis for well scanning lines.

+110V (+B1) POWER SUPPLY ADJUSTMENT

1. Tune the receiver to colour bar pattern.
2. Set brightness and contrast to maximum, and colour to normal.
3. Connect voltmeter to terminal "1T".
4. Adjust VR301 for +110V.

HORIZONTAL WIDTH AND HIGH-VOLTAGE ADJUSTMENT

NOTE: +110V power supply, AGC and grey scale tracking should be adjusted before attempting this adjustment.

1. Tune the receiver to circular pattern.
2. Set brightness and contrast to maximum and colour to minimum.
3. Check picture width. If picture is too wide or narrow, cut or short the leads (AJ1, AJ2). In case the lead is cut, horizontal width will be decreased and the lead is shorted, it will be increased.
4. Connect a high-voltage meter to anode on picture tube.
5. Check high-voltage. High-voltage must measure 23KV ±1.0KV. If high-voltage is lower than 22KV, clip the leads AJ1, AJ2. (By attempting this, the high-voltage is increased approx. 0.5KV.)

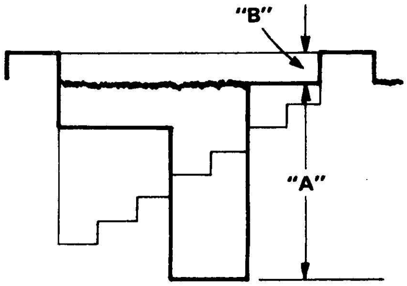
Remarks: This adjustment affects sub-brightness. Therefore, recheck sub-brightness adjustment.

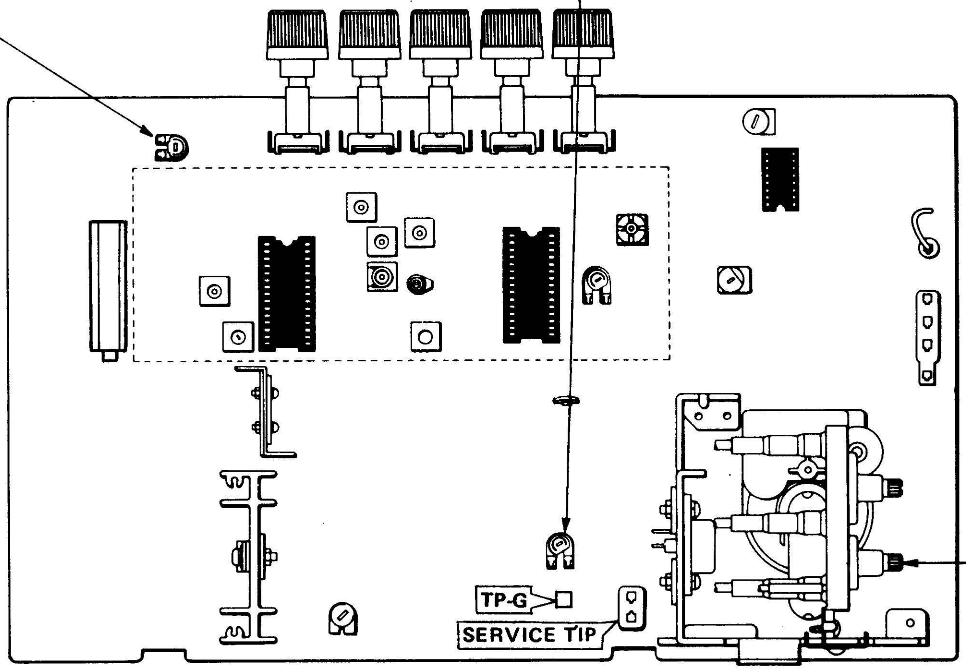
TU-AGC ADJUSTMENT

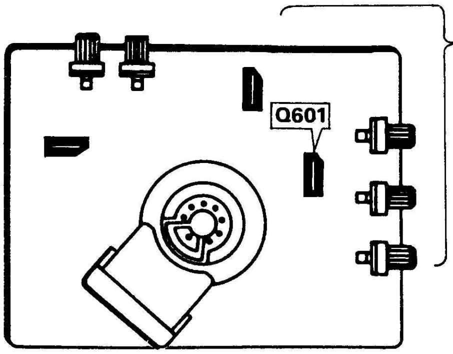
1. Tune the receiver to clearest station.
2. Rotate VR101 fully clockwise and then it anti-clockwise slowly until the snow just disappear.

SUB-CONTRAST ADJUSTMENT

1. Tune the receiver to colour bar pattern.
2. Set contrast to maximum and colour to minimum.
3. Connect oscilloscope to collector of Q601.
4. Connect a short lead between test point "TP-G" and ground.
5. Set brightness for 5Vp-p at "B" as illustrated below.
6. Adjust VR210 for 90Vp-p at "A" as illustrated below.







GREY SCALE TRACKING ADJUSTMENT

1. Set brightness and contrast to maximum, and colour to minimum.
2. Disconnect service tip.
3. Set red (VR612) and blue (VR622) drive controls to mid-range.
4. Set red (VR611), green (VR601) and blue (VR621) bias controls to minimum.
5. Adjust screen control to obtain just visible one coloured line.
6. Advance each bias control to obtain just visible three coloured lines.
7. Reconnect service tip.
8. Adjust red and blue drive controls alternately to produce normal black and white picture.
9. Check for proper grey scale tracking at all brightness levels.

CIRCUIT ALIGNMENTS

VIDEO IF ALIGNMENT

PRELIMINARIES

1. Disconnect power cord from outlet.
2. Disconnect service tip.
3. Apply +15V D.C. to terminal "1J".
   Apply +4V D.C. to test point "TP-C".
4. Connect oscilloscope to test point "TP-F" through 10K ohm resistor.
5. Connect sweep/marker generator output to "TP" on tuner through matching pad as shown in figure-1.
6. Apply +5V D.C. to terminal "1D".

ALIGNMENT PROCEDURE

1. Adjust T131 for maximum response at 39.5MHz.
2. Adjust T133 for minimum response at 33.5MHz.
3. Short between test points "TP-D" and "TP-E" with a damping resistor as shown in figure-2.
4. Adjust IFT on tuner for 20% response at 39.5MHz.
5. Adjust T101 for 30% response at 35.07MHz.

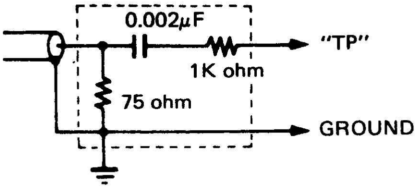


Figure-1

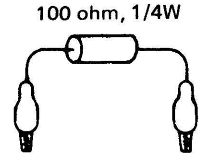


Figure-2

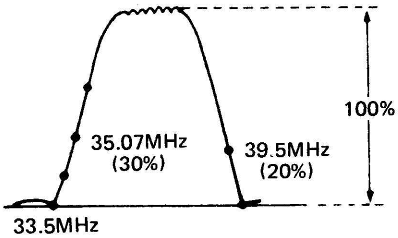
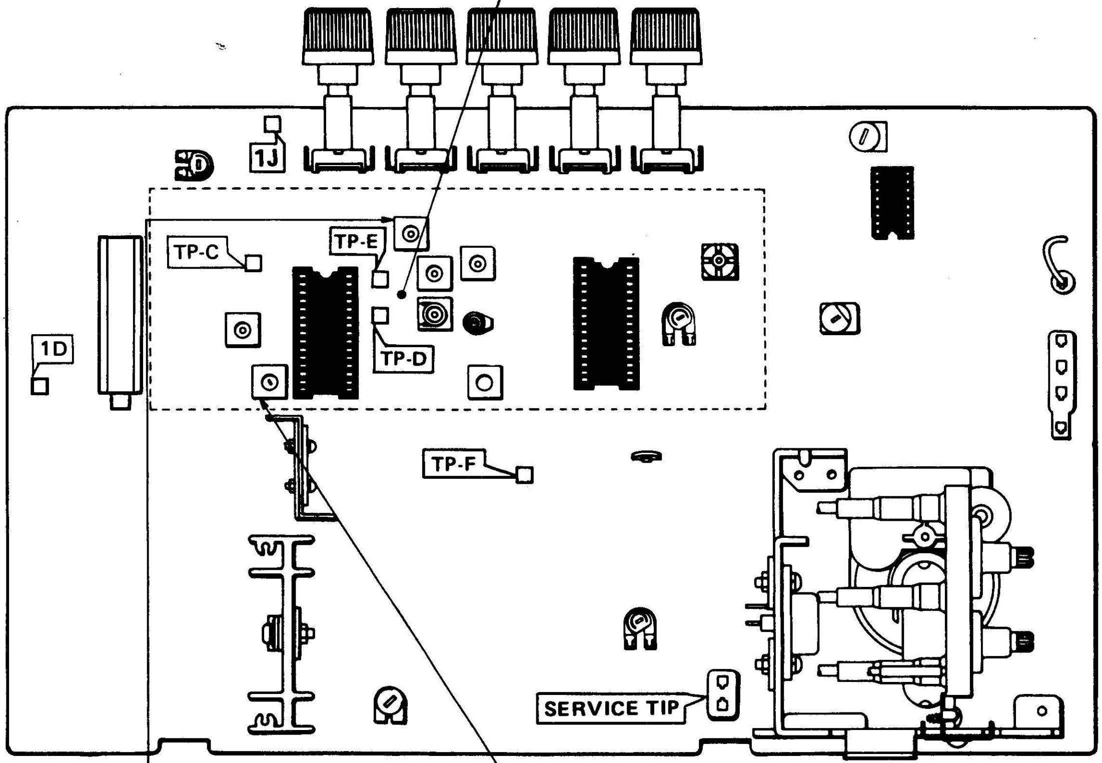


Figure-3



AFT ALIGNMENT

1. Tune the receiver to an active station.
2. Set AFC switch to off.
3. Rotate Fine Tuning clockwise until noise appears.
4. Set AFC switch to on.
5. Adjust T132 to obtain best picture.

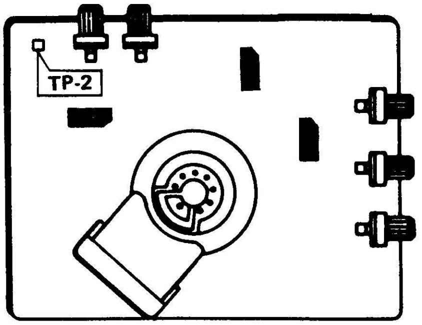
SOUND IF ALIGNMENT

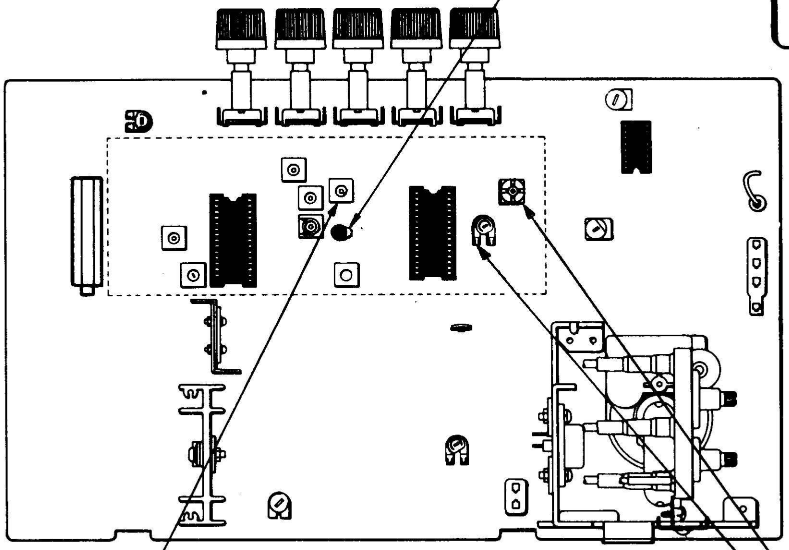
1. Tune the receiver to an active channel and fine tune to obtain best picture.
2. Adjust SIF det. trans. (T151) for maximum audio with minimum noise and hum.

CHROMA ALIGNMENTS

CW. OSC. ALIGNMENT

1. Tune the receiver to colour bar pattern.
2. Set brightness and contrast to maximum.
   Set colour to normal.
3. Rotate tuning knob to anti-clockwise and set this knob just before colour disappear.
4. Connect a short lead between pin 22 and pin 26 of IC201.
5. Adjust VC201 to obtain colour synchronized picture.





APC ALIGNMENT

1. Tune the receiver to colour bar pattern.
2. Connect oscilloscope to test point "TP-2" on CRT board.
3. Set brightness and contrast controls to maximum, and colour to normal.
4. Adjust T230 for maximum amplitude of "A" in figure-1.

1H DELAY ALIGNMENT

1. Tune the receiver to colour bar pattern.
2. Connect oscilloscope to test point "TP-2" on CRT board.
3. Set contrast control to maximum, and brightness and colour to normal.
4. Adjust VR240 for minimum amplitude of "B" as shown in figure-1.
5. Adjust T231 to obtain each 1H waveform (amplitude) for the same as shown in figure-2.

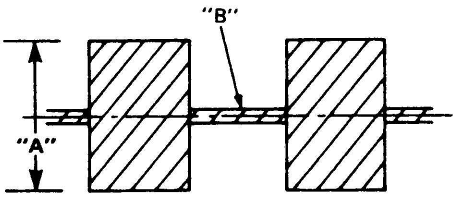


Figure-1 (Vert.)

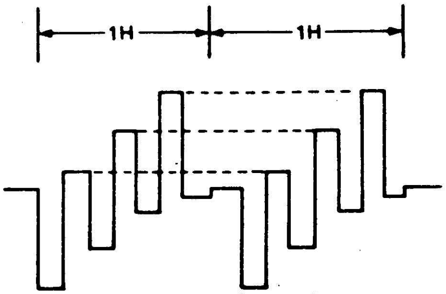


Figure-2 (Horiz.)

SET UP PICTURE TUBE ADJUSTMENTS

CAUTION; Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments. However, the effects of adjacent receiver components, or replace picture tube or deflection yoke may require the need to readjust purity and convergence. If adjustment is required the adjustments should be made in the following sequence.

PURITY ADJUSTMENT

1. Place the picture tube face north or south and demagnetize the picture tube and receiver using an external degaussing coil. When replacing picture tube or deflection yoke, mount deflection yoke and purity-convergence magnets assembly properly, see figure 1.
2. Turn Red and Blue guns off to provide only Green raster by rotating Red and Blue Bias controls fully counterclockwise. Slowly rotate Green Bias control clockwise to produce Green raster.
3. Loosen the screw holding the Deflection Yoke and slide the Deflection Yoke backward as far as possible, and remove the 3 D.Y. spacers.
4. Rotate the spread the Tabs of the two Purity Magnets to centre the vertical green belt in the picture screen. The Purity Magnets are also adjusted to obtain vertical centering of the raster.
5. Slowly slide the Deflection Yoke forward until a uniform green screen is obtained.
6. Check the purity of the red and blue screens for uniformity, turn off other colours to check this (use bias controls). Readjust the yoke position if necessary until all screens are pure.
7. Adjust each Bias control and screen control to obtain white raster. Refer to Gray Scale Adjustment. If part of the picture screen is coloured, adjust the Deflection Yoke position forward or backward slightly.
8. Fasten the screw of the Deflection Yoke. Adjust Convergence next.

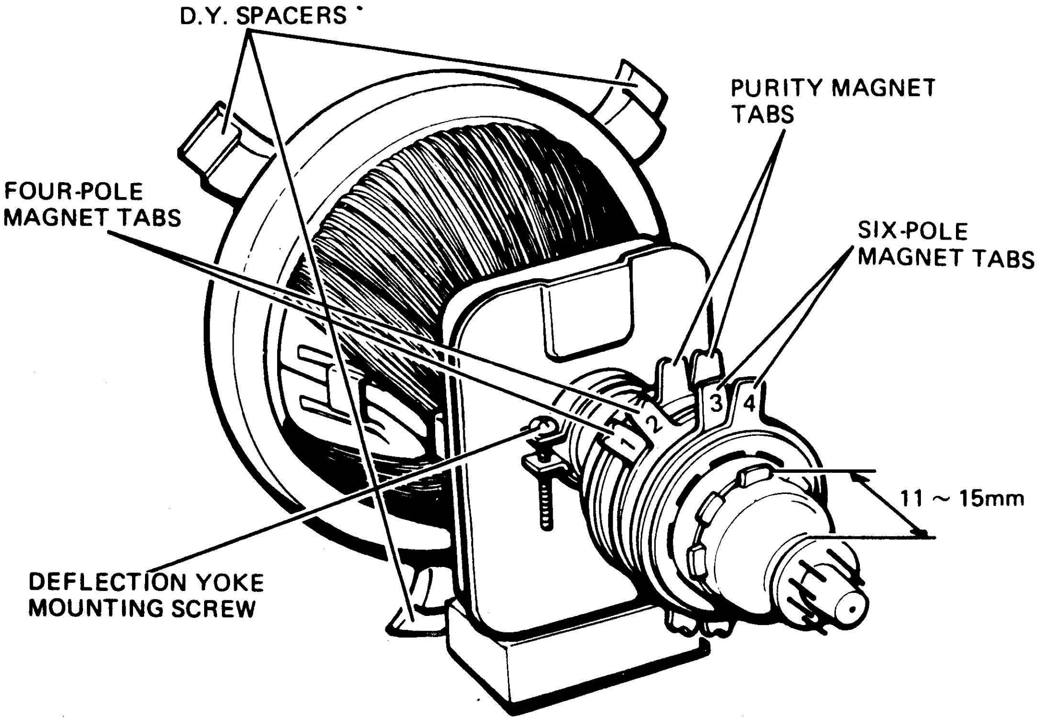
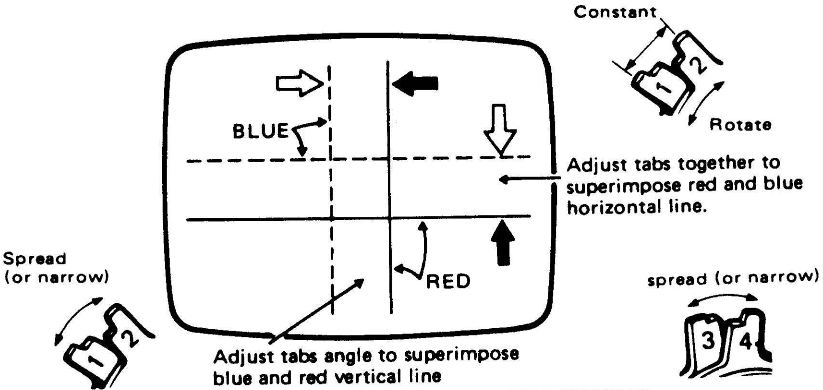


Figure 1 - PURITY AND CONVERGENCE MAGNETS

CONVERGENCE ADJUSTMENT

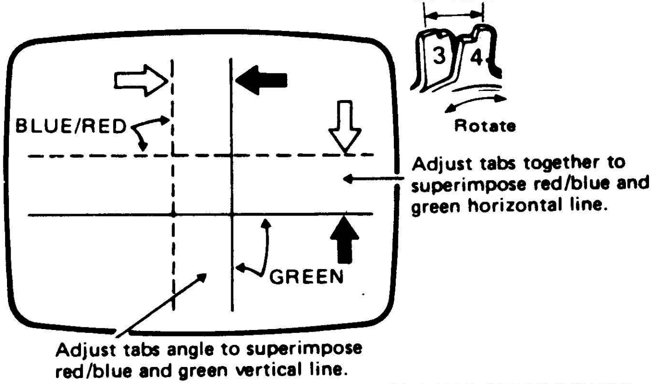
1. Use a dot-crosshatch pattern signal.
2. Turn Red and Blue guns on and turn off Green gun, refer to Purity Adjustment step 2. Adjust the angle between the Tabs of the Four Pole Magnet 1 and 2, and superimpose the Red and Blue vertical lines in the centre area of the picture screen. Refer to figure 2.
3. Keeping the mutual angle of the Tabs of the Four Pole Magnet turn them together to superimpose the Blue and Red horizontal lines in the centre area of the picture screen. Refer to figure 2.
4. Turn Green gun on and adjust Six Pole Magnet 3 and 4 so that the Green line superimposes on the Red/Blue lines. This is the same procedure used in steps 2 and 3. Refer to figure 3.


Constant
Rotate
1
2
BLUE
RED
Spread
(or narrow)
spread (or narrow)
3
4

Adjust tabs together to superimpose red and blue horizontal line.

Adjust tabs angle to superimpose blue and red vertical line

Figure 2 - BLUE AND RED LINE MOVEMENT


Constant
3
4
Rotate
BLUE/RED
GREEN

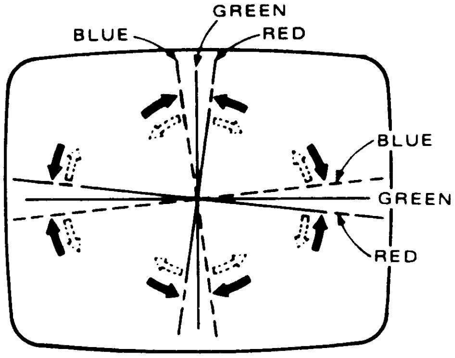
Adjust tabs together to superimpose red/blue and green horizontal line.

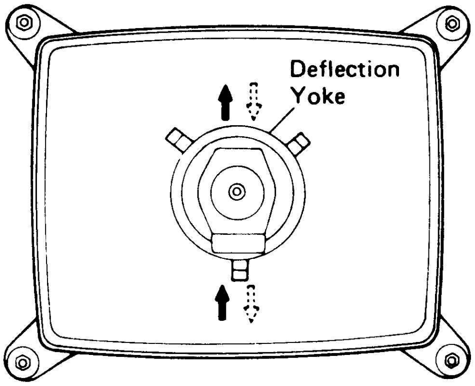
Adjust tabs angle to superimpose red/blue and green vertical line.

Figure 3 - BLUE/RED AND GREEN LINE MOVEMENT

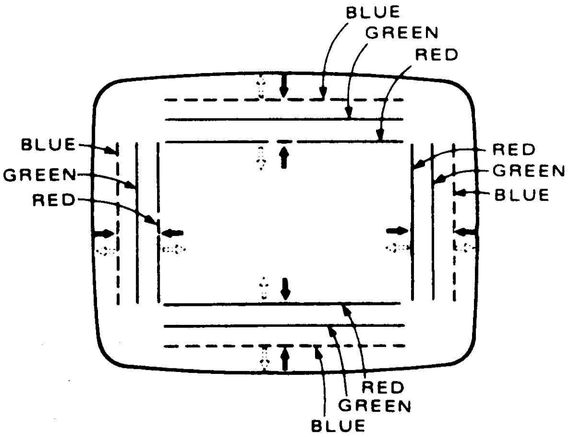
OUTER AREA CONVERGENCE

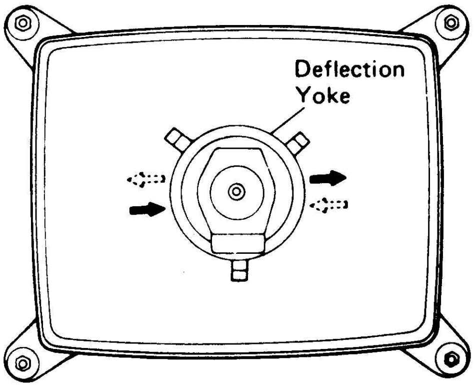
If mis-convergence on the outer area exits, as follow adjustment.


GREEN
BLUE
RED
BLUE
GREEN
RED


Deflection
Yoke

Swing the Deflection Yoke the ← direction, Red/Blue lines on the screen move the ← direction.
Swing the Deflection Yoke the ⇠ direction, Red/Blue lines on the screen move the ⇠ direction.

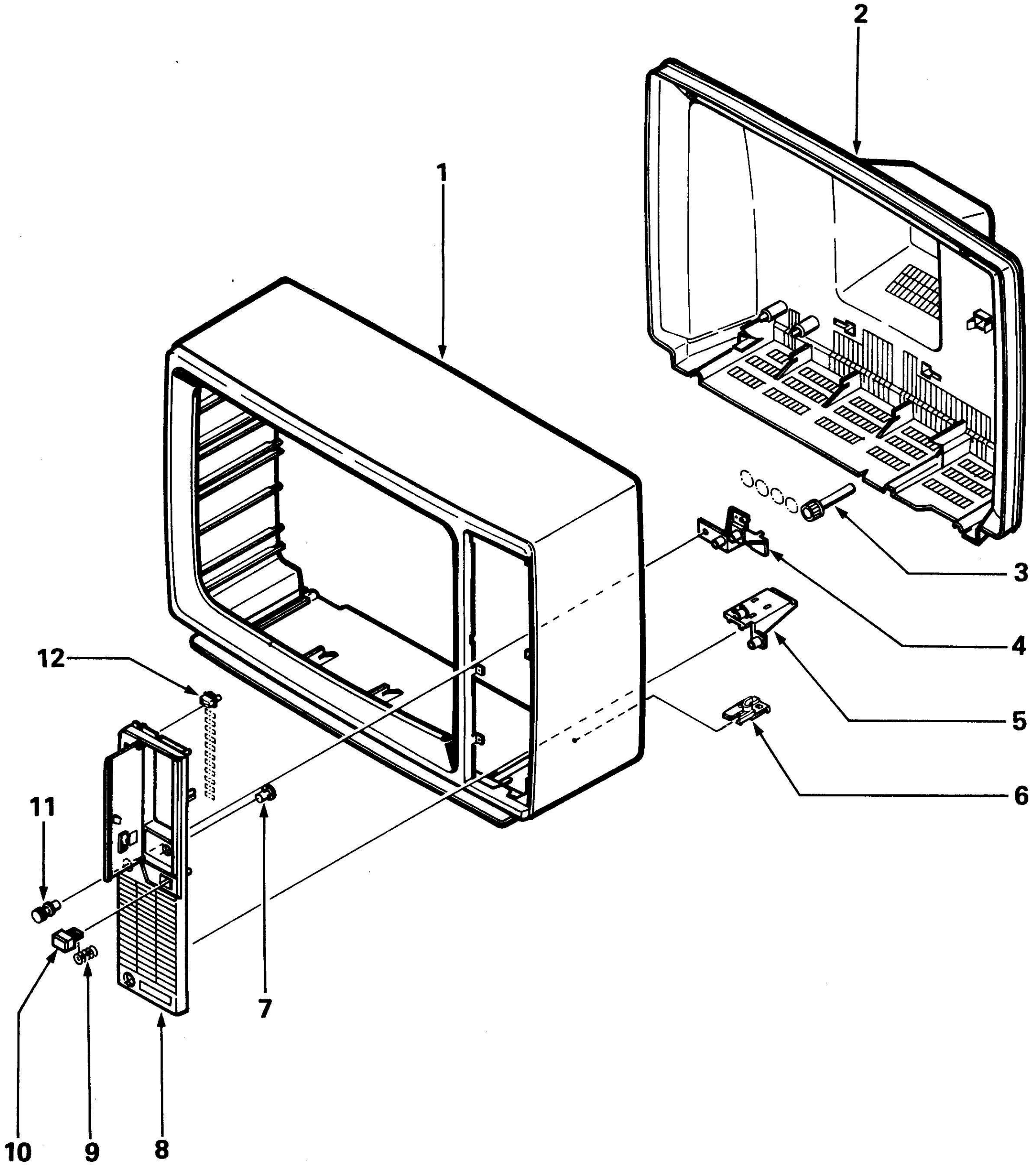

BLUE
GREEN
RED
BLUE
GREEN
RED
RED
GREEN
BLUE
RED
GREEN
BLUE


Deflection
Yoke

Swing the Deflection Yoke the ← direction, Red/Blue lines on the screen move the ← direction.
Swing the Deflection Yoke the ⇠ direction, Red/Blue lines on the screen move the ⇠ direction.
To fasten the Deflection Yoke, Insert and fix the D.Y. spacer.

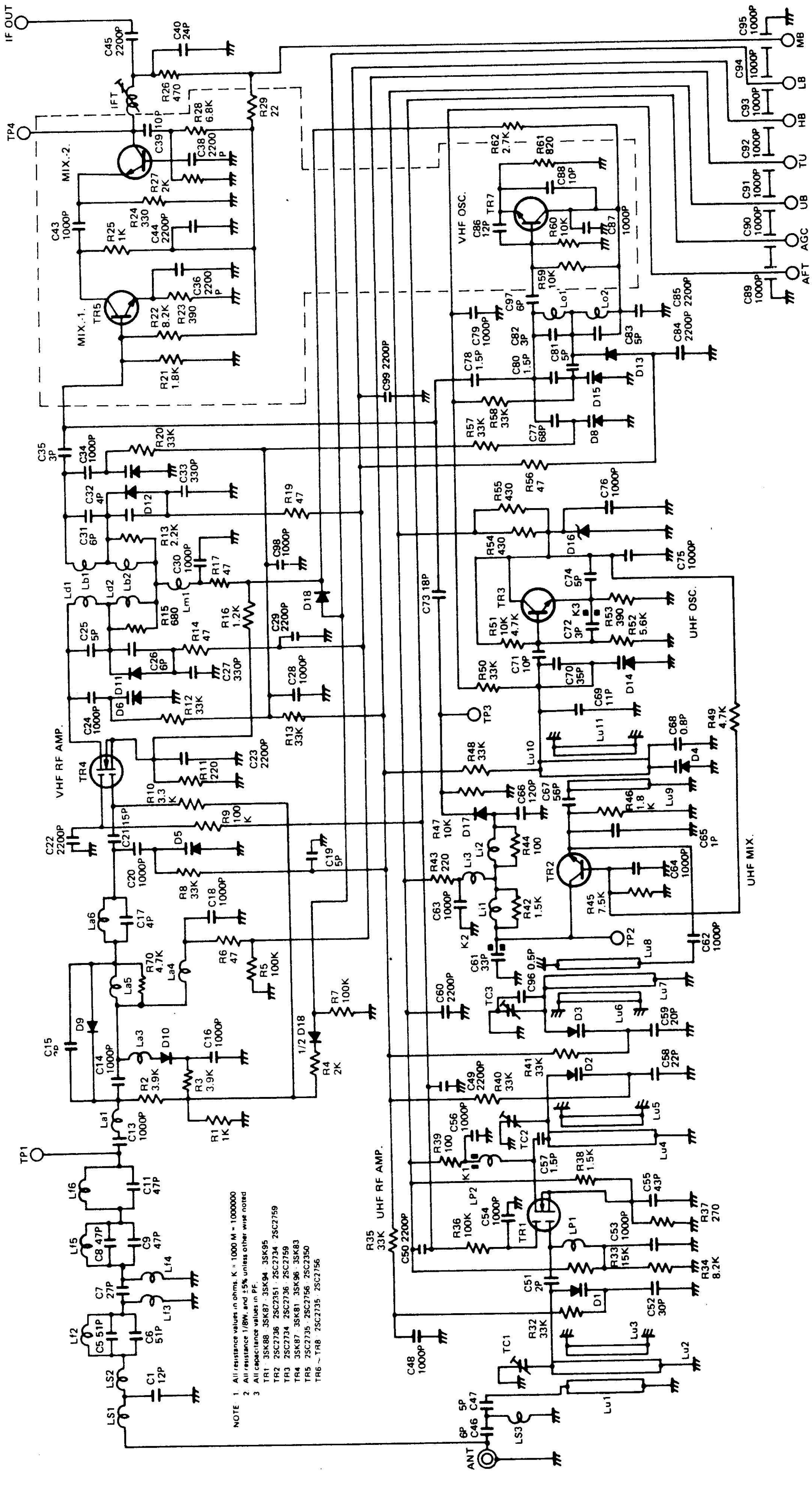
CABINET PARTS LIST

NOTE: Parts order must contain Model No., Key No., Part No., and Description



Key No.	Part No.	Description	Key No.	Part No.	Description
1.	HY00392	Cabinet Front	8.	HY00396	Front Panel
2.	HY00397	Cabinet Back	9.	160485	Spring
3.	3101648	Small Knob (5 used)	10.	K1674	Main Switch Button
4.	3101650	Switch Bracket	11.	K1690	Volume Control Knob
5.	3101649	Headphone Bracket	12.	3101475	Channel Selector Button (12 used)
6.	3101346	AC Cord Holder		3101476	Channel Indicator (Red) (12 used)
7.	3101597	AFT Switch Button			

TUNER CIRCUIT DIAGRAM


IF OUT
TP4
IFT
MIX.-2.
MIX.-1.
TR5
VHF OSC.
TR7
MB
LB
HB
TU
UB
AGC
AFT
VHF RF AMP.
TR4
TP1
TP2
TP3
UHF OSC.
TR3
UHF MIX.
TR2
UHF RF AMP.
TR1
ANT
1/2 D18

NOTE 1. All resistance values in ohms, K = 1000 M = 1000000
2 All resistance 1/8W, and ±5% unless other wise noted
3 All capacitance values in PF.

TR1 3SK88 3SK87 3SK94 3SK95
TR2 2SC2736 2SC2351 2SC2734 2SC2759
TR3 2SC2734 2SC2736 2SC2759
TR4 3SK87 3SK81 3SK96 3SK83
TR5 2SC2735 2SC2756 2SC2350
TR6 ~ TR8 2SC2735 2SC2756

CHASSIS ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF A RECEIVER COMPONENTS INDICATED BY A MARK ⚠ IN THIS PARTS LIST AND THE CIRCUIT DIAGRAM SHOW COMPONENTS WHOSE VALUE HAVE SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENTS REPLACEMENT POINTED OUT BY THE MARK.

NOTE: Part order must contain Model No., Ref. No., Part No. and Description

Ref. No.	Part No.	Description
U880738A (MAIN BOARD B2LA-A)		
TRANSISTORS		
Q101	Q6780Z	2SC2216
Q201	Q5077E	2SA608(E)
	OR Q5102P	2SA564(P)
	OR Q5102Q	2SA564(Q)
	OR Q5077F	2SA608(F)
Q301	Q5053G	2SC536(G)
	OR Q5053F	2SC536(F)
Q302	Q6629R	2SB774(R)
	OR Q6629S	2SB774(S)
	OR Q6629T	2SB774(T)
	OR Q6629Q	2SB774(Q)
	OR Q6629P	2SB774(P)
Q303	Q5053G	2SC536(G)
	OR Q5053F	2SC536(F)
Q304	Q6601Z	2SD811
Q430	Q5183R	2SC945A(R)
	OR Q5183Q	2SC945A(Q)
	OR Q5053G	2SC536(G)
	OR Q5053F	2SC536(F)
Q440	Q6613O	2SC2483(O)
	OR Q6613R	2SC2483(R)
	OR Q6548ER	2SC2073R
	OR Q6548DR	2SC2073R
Q441	Q6614O	2SA1195(O)
	OR Q6614R	2SA1195(R)
	OR Q6586DR	2SA940R
	OR Q6586ER	2SA940R
Q442	Q6541ZM	2SC2229M
Q450	Q6541ZM	2SC2229M
	OR Q6531ZM	2SC2228M
Q451	Q6574Z	2SD869
INTEGRATED CIRCUITS		
IC101	Q7253	M51356P, VIF AMP. & SIF AMP.
IC161	Q7228	LA4220, AUDIO AMP.
IC201	Q7239	M51393P
IC401	Q7227	LA7800, DEFLECTION
CAPACITORS		
C102	CCHCJ560	CERAMIC,56PF,+-5%,50V
C105	CCHCJ560	CERAMIC,56PF,+-5%,50V
C106	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C107	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C108	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C109	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C110	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C111	CCHFK102	CERAMIC,1000PF,+-10%,50V
C112	CEDEA101	ELECTROLYTIC,100MF,16V
C113	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C114	CEHEA1R0	ELECTROLYTIC,1MF,50V
C115	CFHSK104	MYLAR FILM,0.1MF,+-10%,50V
	OR CFHRK104	MYLAR FILM,0.1MF,+-10%,50V
C116	CEHEA1R0	ELECTROLYTIC,1MF,50V
C122	CEFEA4R7	ELECTROLYTIC,4.7MF,25V
C123	CEHEA2R2	ELECTROLYTIC,2.2MF,50V
C124	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C125	CEHEA1R0	ELECTROLYTIC,1MF,50V
C126	CFHRK104	MYLAR FILM,0.1MF,+-10%,50V
	OR CFHSK104	MYLAR FILM,0.1MF,+-10%,50V
C127	CEFEA4R7	ELECTROLYTIC,4.7MF,25V
C128	CFHRK473	MYLAR FILM,0.047MF,+-10%,50V
	OR CFHSK473	MYLAR FILM,0.047MF,+-10%,50V
C131	CCHBJ560	CERAMIC,56PF,+-5%,50V
C132	CCHCJ820	CERAMIC,82PF,+-5%,50V
C133	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C134	CCHBJ120	CERAMIC,12PF,+-5%,50V
C136	CCHDJ101	CERAMIC,100PF,+-5%,50V
C151	CEDEA471	ELECTROLYTIC,470MF,16V
C152	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V

Ref. No.	Part No.	Description
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C153	CFHSK562	MYLAR FILM,5600PF,+-10%,50V
	OR CFHRK562	MYLAR FILM,5600PF,+-10%,50V
C154	CCHJP472	CERAMIC,4700PF,+100%-0%,50V
C155	CCHBJ220	CERAMIC,22PF,+-5%,50V
C156	CCHBJ680	CERAMIC,68PF,+-5%,50V
C157	CFHSK822	MYLAR FILM,8200PF,+-10%,50V
	OR CFHRK822	MYLAR FILM,8200PF,+-10%,50V
C158	CEHANR47	NON-POLARIZED ELECTROLYTIC,0.47MF,50V
C159	CEHEA1R0	ELECTROLYTIC,1MF,50V
C161	CEDEA221	ELECTROLYTIC,220MF,16V
C162	CEFEA330	ELECTROLYTIC,33MF,25V
C163	CCHAK101	CERAMIC,100PF,+-10%,50V
C164	CFHRK103	MYLAR FILM,0.01MF,+-10%,50V
	OR CFHSK103	MYLAR FILM,0.01MF,+-10%,50V
C165	CEFEA470	ELECTROLYTIC,47MF,25V
C166	CEDEA471	ELECTROLYTIC,470MF,16V
C167	CFHSK473	MYLAR FILM,0.047MF,+-10%,50V
	OR CFHRK473	MYLAR FILM,0.047MF,+-10%,50V
C168	CEFEA4R7	ELECTROLYTIC,4.7MF,25V
C171	CFHRK332	MYLAR FILM,3300PF,+-10%,50V
	OR CFHSK332	MYLAR FILM,3300PF,+-10%,50V
C172	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C173	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C175	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C188	CCSAK560	CERAMIC,56PF,+-10%,500V
C201	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C202	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C203	CEHEA1R0	ELECTROLYTIC,1MF,50V
C204	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C205	CCHBJ680	CERAMIC,68PF,+-5%,50V
C207	CCHBJ560	CERAMIC,56PF,+-5%,50V
C211	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C212	CCHBJ150	CERAMIC,15PF,+-5%,50V
C213	CCHBJ150	CERAMIC,15PF,+-5%,50V
C214	CEDEA100	ELECTROLYTIC,10MF,16V
C216	CCHBC3R0	CERAMIC,3PF,+-0.25PF,50V
C217	CEBEA220	ELECTROLYTIC,22MF,10V
C218	CEHEA4R7	ELECTROLYTIC,4.7MF,50V
C221	CEHEA2R2	ELECTROLYTIC,2.2MF,50V
C230	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C231	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C232	CCHBJ820	CERAMIC,82PF,+-5%,50V
C233	CEFEA3R3	ELECTROLYTIC,3.3MF,25V
C235	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C236	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V

Ref. No.	Part No.	Description
C237	CCHBJ101	CERAMIC,100PF,+-5%,50V
C238	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C239	CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
	OR CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
C240	CFHBJ105	MYLAR FILM,1MF,+-5%,50V
	OR CFHBK105	MYLAR FILM,1MF,+-10%,50V
C241	CFHRK223	MYLAR FILM,0.022MF,+-10%,50V
C244	CEHEAR47	ELECTROLYTIC,0.47MF,50V
C245	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
C246	CCHBJ151	CERAMIC,150PF,+-5%,50V
C247	CCHBJ390	CERAMIC,39PF,+-5%,50V
C248	CCHBJ470	CERAMIC,47PF,+-5%,50V
⚠ C301	CFUBM564	MYLAR FILM,0.56MF,+-20%,630V
C304	CCVGM102	CERAMIC,1000PF,+-20%,1KV
C305	CCVGM102	CERAMIC,1000PF,+-20%,1KV
C306	CCVGM102	CERAMIC,1000PF,+-20%,1KV
C307	CCVGM102	CERAMIC,1000PF,+-20%,1KV
C308	C71739A	ELECTROLYTIC,100MF,400V
C310	CFHRK333	MYLAR FILM,0.033MF,+-10%,50V
	OR CFHSK333	MYLAR FILM,0.033MF,+-10%,50V
C312	CEGEA100	ELECTROLYTIC,10MF,35V
C313	CFHSK104	MYLAR FILM,0.1MF,+-10%,50V
	OR CFHRK104	MYLAR FILM,0.1MF,+-10%,50V
C314	CEFBA470	ELECTROLYTIC,47MF,25V
C315	CCZVK152	CERAMIC,1500PF,+-10%,2KV
	OR CCZWK152	CERAMIC,1500PF,+-10%,2KV
⚠ C317	CCQYM222	CERAMIC,2200PF,+-20%,400V
C320	CCVGM222	CERAMIC,2200PF,+-20%,1KV
C321	C72189A	ELECTROLYTIC,47MF,160V
C322	CEGEA102	ELECTROLYTIC,1000MF,35V
C323	CCVJP472	CERAMIC,4700PF,+100%-0%,1KV
C401	CTFEK105	ELECTROLYTIC,1MF,+-10%,25V
C402	CFHRK103	MYLAR FILM,0.01MF,+-10%,50V
	OR CFHSK103	MYLAR FILM,0.01MF,+-10%,50V
C403	CFHSK683	MYLAR FILM,0.068MF,+-10%,50V
	OR CFHRK683	MYLAR FILM,0.068MF,+-10%,50V
C404	CEFEA4R7	ELECTROLYTIC,4.7MF,25V
C405	CCHFK821	CERAMIC,820PF,+-10%,50V
C406	CEDEA101	ELECTROLYTIC,100MF,16V
C407	CFHRK683	MYLAR FILM,0.068MF,+-10%,50V
	OR CFHSK683	MYLAR FILM,0.068MF,+-10%,50V
C410	CEHEA1R0	ELECTROLYTIC,1MF,50V
C411	CFHSK103	MYLAR FILM,0.01MF,+-10%,50V
	OR CFHRK103	MYLAR FILM,0.01MF,+-10%,50V
C412	C9212A	MYLAR FILM,5600PF,+-5%,50V
	OR C9212	MYLAR FILM,5600PF,+-5%,50V
C422	CEFAN1R0	NON-POLARIZED ELECTROLYTIC,1MF,25V
C431	CCHCJ121	CERAMIC,120PF,+-5%,50V
C432	CCSAK820	CERAMIC,82PF,+-10%,500V
C440	C7201	ELECTROLYTIC,4.7MF,250V
C441	CCHFK472	CERAMIC,4700PF,+-10%,50V
C442	CNLRK333	POLYPROPYLENE,0.033MF,+-10%,200V
C443	CFHRJ473	MYLAR FILM,0.047MF,+-5%,50V
	OR CFHSJ473	MYLAR FILM,0.047MF,+-5%,50V
C444	CTDEK225	ELECTROLYTIC,2.2MF,+-10%,16V

Ref. No.	Part No.	Description
C445	CEHEA471	ELECTROLYTIC,470MF,50V
C446	CEHEAR47	ELECTROLYTIC,0.47MF,50V
C447	CEHEA100	ELECTROLYTIC,10MF,50V
C448	CCSFK561	CERAMIC,560PF,+-10%,500V
C450	CCSFK102	CERAMIC,1000PF,+-10%,500V
C451	CEKEA4R7	ELECTROLYTIC,4.7MF,160V
⚠ C452	CC1VJ331	CERAMIC,330PF,+-5%,3KV
	OR CC1WJ331	CERAMIC,330PF,+-5%,3KV
⚠ C453	CC1VJ331	CERAMIC,330PF,+-5%,3KV
	OR CC1WJ331	CERAMIC,330PF,+-5%,3KV
⚠ C454	CN9RJ822	POLYPROPYLENE,8200PF,+-5%,1600V
	OR CN9BJ822	POLYPROPYLENE,8200PF,+-5%,1600V
	OR CNZDJ822	POLYPROPYLENE,8200PF,+-5%,2KV
C455	CCSFK151	CERAMIC,150PF,+-10%,500V
C461	CFMBJ474	MYLAR FILM,0.47MF,+-5%,250V
C462	CEHEA101	ELECTROLYTIC,100MF,50V
C463	CEFEA102	ELECTROLYTIC,1000MF,25V
C465	CEFEA100	ELECTROLYTIC,10MF,25V
C466	CN9RJ682	POLYPROPYLENE,6800PF,+-5%,1600V
	OR CN9BJ682	POLYPROPYLENE,6800PF,+-5%,1600V
	OR CNZDJ682	POLYPROPYLENE,6800PF,+-5%,2KV
C467	CEDEA471	ELECTROLYTIC,470MF,16V
C470	CFMBJ823	MYLAR FILM,0.082MF,+-5%,250V
C471	CEHEA1R0	ELECTROLYTIC,1MF,50V
RESISTORS		
R101	RFACJ122	CARBON,1200 OHM,+-5%,1/4W
R102	RFACJ562	CARBON,5600 OHM,+-5%,1/4W
R104	RFACJ221	CARBON,220 OHM,+–5%,1/4W
R105	RFACJ330	CARBON,33 OHM,+–5%,1/4W
R107	RFACJ271	CARBON,270 OHM,+-5%,1/4W
R108	RFACJ104	CARBON,100K OHM,+-5%,1/4W
R109	RFACJ332	CARBON,3300 OHM,+-5%,1/4W
R110	RFACJ391	CARBON,390 OHM,+-5%,1/4W
R120	RFACJ274	CARBON,270K OHM,+–5%,1/4W
R121	RFACJ153	CARBON,15K OHM,+-5%,1/4W
R122	RFACJ473	CARBON,47K OHM,+-5%,1/4W
⚠ R124	RNBPJ181	METALIZED CARBON,180 OHM,+-5%,1/2W
⚠ R125	RNBPJ270	METALIZED CARBON,27 OHM,+-5%,1/2W
R126	RFACJ101	CARBON,100 OHM,+-5%,1/4W
R131	RFACJ182	CARBON,1800 OHM,+-5%,1/4W
R132	RFACJ181	CARBON,180 OHM,+-5%,1/4W
R133	RFACJ102	CARBON,1K OHM,+-5%,1/4W
R134	RFACJ272	CARBON,2700 OHM,+-5%,1/4W
R136	RFACJ102	CARBON,1K OHM,+-5%,1/4W
R137	RFACJ104	CARBON,100K OHM,+-5%,1/4W
R150	RFACJ102	CARBON,1K OHM,+-5%,1/4W
R151	RFACJ222	CARBON,2200 OHM,+-5%,1/4W
R153	RFACJ102	CARBON,1K OHM,+-5%,1/4W
R156	RFACJ472	CARBON,4700 OHM,+-5%,1/4W
R157	RFACJ332	CARBON,3300 OHM,+-5%,1/4W
R158	RFACJ103	CARBON,10K OHM,+-5%,1/4W
R160	RFACJ103	CARBON,10K OHM,+-5%,1/4W
R161	RFACJ103	CARBON,10K OHM,+-5%,1/4W
R162	RFACJ683	CARBON,68K OHM,+-5%,1/4W
R188	RFACJ102	CARBON,1K OHM,+-5%,1/4W
R190	RR2FJ270	OXIDE METALIZED,27 OHM,+-5%,2W

Ref. No.	Part No.	Description
R200	RFACJ333	CARBON,33K OHM,+-5%,1/4W
	OR RFACJ393	CARBON,39K OHM,+-5%,1/4W
R201	RFACJ183	CARBON,18K OHM,+-5%,1/4W
R203	RFACJ392	CARBON,3900 OHM,+-5%,1/4W
R204	RFACJ122	CARBON,1200 OHM,+-5%,1/4W
R205	RFACJ391	CARBON,390 OHM,+-5%,1/4W
R206	RFACJ154	CARBON,150K OHM,+-5%,1/4W
R209	RFACJ472	CARBON,4700 OHM,+-5%,1/4W
R210	RFACJ152	CARBON,1500 OHM,+-5%,1/4W
R211	RFACJ152	CARBON,1500 OHM,+-5%,1/4W
R213	RFACJ471	CARBON,470 OHM,+-5%,1/4W
R217	RFACJ102	CARBON,1K OHM,+-5%,1/4W
R218	RFACJ114	CARBON,110K OHM,+-5%,1/4W
R222	RFACJ331	CARBON,330 OHM,+-5%,1/4W
R231	RFACJ183	CARBON,18K OHM,+-5%,1/4W
R233	RFACJ152	CARBON,1500 OHM,+-5%,1/4W
R234	RFACJ103	CARBON,10K OHM,+-5%,1/4W
R235	RFACJ153	CARBON,15K OHM,+-5%,1/4W
R236	RFACJ473	CARBON,47K OHM,+-5%,1/4W
R237	RFACJ104	CARBON,100K OHM,+-5%,1/4W
R238	RFACJ332	CARBON,3300 OHM,+-5%,1/4W
R239	RFACJ332	CARBON,3300 OHM,+-5%,1/4W
R240	RFACJ332	CARBON,3300 OHM,+-5%,1/4W
R242	RFACJ681	CARBON,680 OHM,+-5%,1/4W
R243	RFACJ681	CARBON,680 OHM,+-5%,1/4W
R244	RFACJ225	CARBON,2200K OHM,+-5%,1/4W
R247	RFACJ561	CARBON,560 OHM,+-5%,1/4W
R248	RFACJ471	CARBON,470 OHM,+-5%,1/4W
R252	RFACJ334	CARBON,330K OHM,+-5%,1/4W
R255	RFACJ122	CARBON,1200 OHM,+-5%,1/4W
R301	RY6ZK6R8	WIRE WOUND,6.8 OHM,+-10%,6W
	OR RY6WK6R8	WIRE WOUND,6.8 OHM,+-10%,6W
R302	RFBPJ334	CARBON,330K OHM,+-5%,1/2W
⚠ R304	RFACG682	CARBON,6800 OHM,+-2%,1/4W
⚠ R305	RFACG272	CARBON,2700 OHM,+-2%,1/4W
R306	RFACJ182	CARBON,1800 OHM,+-5%,1/4W
R307	RFACJ822	CARBON,8200 OHM,+-5%,1/4W
R308	RFACJ103	CARBON,10K OHM,+-5%,1/4W
R309	RFACJ682	CARBON,6800 OHM,+-5%,1/4W
R310	RFACJ472	CARBON,4700 OHM,+-5%,1/4W
R311	RFACJ120	CARBON,12 OHM,+-5%,1/4W
R312	RFACJ331	CARBON,330 OHM,+-5%,1/4W
R313	RY2PJ2R2	WIRE WOUND,2.2 OHM,+-5%,2W
R314	RR2FJ270	OXIDE METALIZED,27 OHM,+-5%,2W
R315	RY6ZK390	WIRE WOUND,39 OHM,+-10%,6W
	OR RY6WK390	WIRE WOUND,39 OHM,+-10%,6W
⚠ R316	RCBEK565	SOLID,5600K OHM,+-10%,1/2W
⚠ R317	RCBEK565	SOLID,5600K OHM,+-10%,1/2W
R318	RY2PKR33	WIRE WOUND,0.33 OHM,+-10%,2W
R320	RR1FJ102	OXIDE METALIZED,1K OHM,+-5%,1W
R321	RR2FJ120	OXIDE METALIZED,12 OHM,+-5%,2W
R401	RFACJ223	CARBON,22K OHM,+-5%,1/4W
R402	RFACJ124	CARBON,120K OHM,+-5%,1/4W
R403	RFACJ123	CARBON,12K OHM,+-5%,1/4W
R404	RFACJ222	CARBON,2200 OHM,+-5%,1/4W
R405	RFACJ154	CARBON,150K OHM,+-5%,1/4W
R406	RFACJ471	CARBON,470 OHM,+-5%,1/4W
R407	RFACJ682	CARBON,6800 OHM,+-5%,1/4W

Ref. No.	Part No.	Description
R408	RFACJ123	CARBON,12K OHM,+-5%,1/4W
R409	RFACJ473	CARBON,47K OHM,+-5%,1/4W
R410	RR2FJ682	OXIDE METALIZED,6800 OHM,+-5%,2W
R412	RFACJ103	CARBON,10K OHM,+-5%,1/4W
R420	RFACJ472	CARBON,4700 OHM,+-5%,1/4W
R422	RFACJ121	CARBON,120 OHM,+-5%,1/4W
R424	RR1FJ562	OXIDE METALIZED,5600 OHM,+-5%,1W
R431	RFACJ153	CARBON,15K OHM,+-5%,1/4W
R432	RFACJ562	CARBON,5600 OHM,+-5%,1/4W
R433	RFACJ562	CARBON,5600 OHM,+-5%,1/4W
R434	RFACJ154	CARBON,150K OHM,+-5%,1/4W
R435	RFACJ333	CARBON,33K OHM,+-5%,1/4W
R440	RR3HJ152	OXIDE METALIZED,1500 OHM,+-5%,3W
	OR RR3ZJ152	OXIDE METALIZED,1500 OHM,+-5%,3W
R441	RR1FJ103	OXIDE METALIZED,10K OHM,+-5%,1W
R443	RFACJ333	CARBON,33K OHM,+-5%,1/4W
R444	RFACJ561	CARBON,560 OHM,+-5%,1/4W
R445	RFBPJ5R6	CARBON,5.6 OHM,+-5%,1/2W
R446	RR1FJ392	OXIDE METALIZED,3900 OHM,+-5%,1W
R447	RFACJ333	CARBON,33K OHM,+-5%,1/4W
R448	RFACJ473	CARBON,47K OHM,+-5%,1/4W
R449	RFACJ271	CARBON,270 OHM,+-5%,1/4W
R450	RFACJ331	CARBON,330 OHM,+-5%,1/4W
R451	RFACJ562	CARBON,5600 OHM,+-5%,1/4W
R452	RR2FJ332	OXIDE METALIZED,3300 OHM,+-5%,2W
R453	RFACJ1R0	CARBON,1 OHM,+-5%,1/4W
⚠ R461	RNBPJ102	METALIZED CARBON,1K OHM,+-5%,1/2W
⚠ R462	RNBPJ5R6	METALIZED CARBON,5.6 OHM,+-5%,1/2W
⚠ R463	RN1PJ2R7	METALIZED CARBON,2.7 OHM,+-5%,1W
⚠ R464	RNBPJ100	METALIZED CARBON,10 OHM,+-5%,1/2W
R465	RF2EJ225	CARBON,2200K OHM,+-5%,2W
R466	RFACJ271	CARBON,270 OHM,+-5%,1/4W

VARIABLE RESISTORS

Ref. No.	Part No.	Description
VR101	G0096XXT	5K OHM, B
VR210	G0122XXT	100K OHM, B
VR230	G0118	30K OHM, B
VR240	G0249XXT	3K OHM, B
VR293	G3201XFT	30K OHM, C
	OR G3201XFM	30K OHM, C
VR294	G3196XFM	10K OHM, B
	OR G3196XFT	10K OHM, B
VR295	G3196XFM	10K OHM, B
	OR G3196XFT	10K OHM, B
⚠ VR301	G0232XDM	1K OHM, B
	OR G0232XDT	1K OHM, B
VR410	G0151	5K OHM, B
VR440	G0228XXM	20K OHM, B
	OR G0228XXB	20K OHM, B
VR491	G3195XFM	300 OHM, B
	OR G3195XFT	300 OHM, B
VR492	G3202XFT	20K OHM, B
	OR G3202XFM	20K OHM, B

TRANSFORMERS

Ref. No.	Part No.	Description
T101	S8161	VIF MATCHING
T131	S8141	VIDEO DET.
T132	S8931	AFT
T133	S8587	VIDEO IF
T151	S9062	SIF DET.
T230	S3832	PHASE
T231	S5036	MATCHING
⚠ T301	A5048	CONVERTER
T450	A5050	DRIVE
⚠ T460	F1143-A	FLY BACK TRANS.

COILS

Ref. No.	Part No.	Description
L101	LPAJ560	PEAKING, 56UH
L131	LPAJ150	PEAKING, 15UH
L210	L7346	DELAY LINE
L230	LPAJ220	PEAKING, 22UH
L231	L7309	1H DELAY LINE
L232	LPAJ8R2	PEAKING, 8.2UH
L233	LPAJ820	PEAKING, 82UH
L235	LPAJ5R6	PEAKING, 5.6UH
L236	LPAJ470	PEAKING, 47UH
L238	LPAJ100	PEAKING, 10UH
L239	LPAJ100	PEAKING, 10UH
L240	LPAJ100	PEAKING, 10UH
L302	L321	LINE FILTER
L320	L4079	INDUCTOR, 82MH
L450	L7133B	FILTER, 3.3UH
	OR L7133A	FILTER, 3.3UH
	OR L7133	FILTER, 3.3UH
L460	A5063	LINEARITY

DIODES

Ref. No.	Part No.	Description
D101	E1216ZG	EQB01-12, ZENER, 12V
D188	E1229R	1S2473
	OR E1324R	1S2076
	OR E1121R	1S1555
D210	E1121R	1S1555
	OR E1324R	1S2076
	OR E1229R	1S2473
D211	E1205ZA	EQA01-06, 6V, ZENER
D213	E1121R	1S1555
	OR E1324R	1S2076
	OR E1229R	1S2473
D230	E1216ZG	EQB01-12, ZENER, 12V
D231	E1121R	1S1555
	OR E1229R	1S2473
	OR E1324R	1S2076
D301	E1448R	RM2B
	OR E1450R	ERC04-10
D302	E1448R	RM2B
	OR E1450R	ERC04-10
D303	E1448R	RM2B
	OR E1450R	ERC04-10
D304	E1448R	RM2B

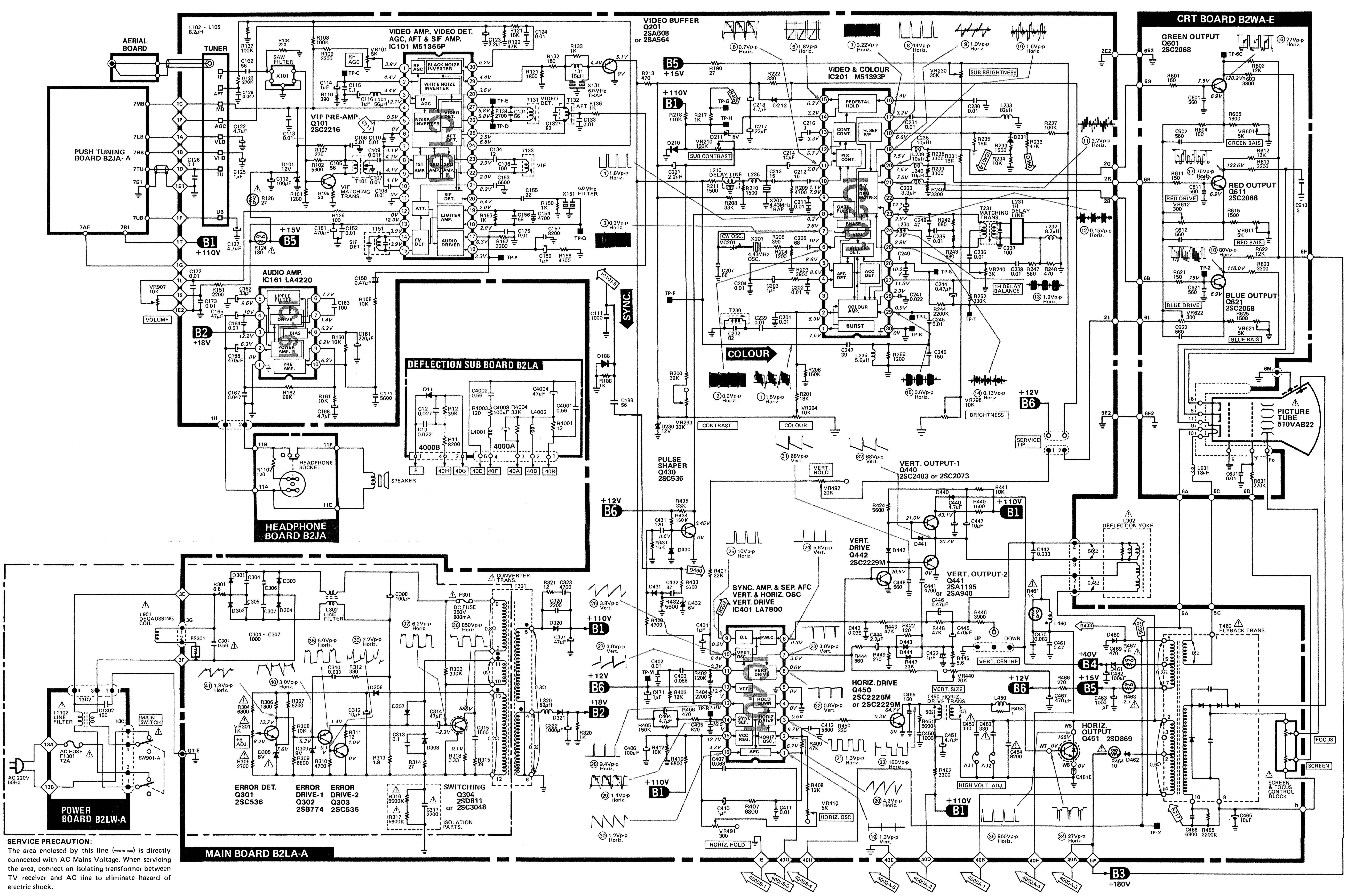
Ref. No.	Part No.	Description
	OR E1450R	ERC04-10
⚠ D305	E1501ZA	EQA01-08RG, ZENER, 8V
D306	E1314R	ERB28-04
	OR E1338R	RU-1
D307	E1338R	RU-1
	OR E1314R	ERB28-04
D308	E1264R	1S2095A
D309	E1738ZR	EQA01-09R, ZENER, 9V
D320	E1432R	UF-3N
D321	E1339R	RU2
	OR E1412R	ERC24-04M
D430	E1121R	1S1555
D431	E1121R	1S1555
	OR E1324R	1S2076
	OR E1229R	1S2473
D432	E1205ZA	EQA01-06, 6V, ZENER
D440	E1442R	S5277B
D441	E1121R	1S1555
	OR E1229R	1S2473
	OR E1324R	1S2076
D442	E1121R	1S1555
D443	E1031RT	1S188TV
D444	E1031RT	1S188TV
D460	E1412R	ERC24-04M
	OR E1339R	RU2
D461	E1339R	RU2
	OR E1412R	ERC24-04M
D462	E1412R	ERC24-04M
	OR E1339R	RU2
MISCELLANEOUS		
⚠ F301	E5062	FUSE, 0.8A
F301A	E5740	FUSE CLIP
F301B	E5740	FUSE CLIP
IC101A	E3270	IC SOCKET, 30PIN
IC201A	E3270	IC SOCKET, 30PIN
IC401A	E3112	IC SOCKET, 16PIN
⚠ F0&SC-VR	R0155XS	FOCUS RESISTOR
	OR R0155XH	FOCUS RESISTOR
HS1	2601159	H-HEAT SINK
HS2	2700046	RADIATOR
PS301	E1407P	POSISTOR, PTH451A
	OR E1574P	POSISTOR
Q304A	E4606	SHEET, INSULATION
Q304C2	E4635	SPACER, INSULATION
Q451A	E4606	SHEET, INSULATION
Q451C2	E4635	SPACER, INSULATION
Q451E	Z2003	PIPE CORE
Q451G	322224	SHEET, INSULATION
SV	E6052	HOUSING, 2P
TUNER	T2536EA	ALL CHANNEL TUNER
VC	E6051	HOUSING, 1P
VC201	C9026	TRIMMER CAPACITOR
WF01	E3160	TERMINAL SOCKET FOR FOCUS BLOCK
X101	E8337	SAW FILTER
X131	E8315	CERAMIC FILTER

Ref. No.	Part No.	Description
X151	E8316	6.0MHZ FILTER, CERAMIC FILTER
X201	E8332A	CRYSTAL, 4.43MHZ
	OR E8332	CRYSTAL, 4.43MHZ OSC.
X202	E8318	4.43MHZ TRAP, CERAMIC FILTER
3	E3257	SOCKET, TERMINAL
4	E3257	SOCKET, TERMINAL
40A	E3330	MINI CONNECTOR SOCKET, 5P
4000A1-5	E3325	CONNECTOR, TERMINAL SOCKET
4000B	E4724	6P MINI HOUSING
4000B1	E3257	SOCKET, TERMINAL
U880637E (CRT BOARD B2WA-E)		
TRANSISTORS		
Q601	Q66090	2SC2068(0)
	OR Q6609Y	2SC2068(Y)
	OR Q6609R	2SC2068(R)
Q611	Q6609R	2SC2068(R)
	OR Q6609Y	2SC2068(Y)
	OR Q66090	2SC2068(0)
Q621	Q6609Y	2SC2068(Y)
	OR Q6609R	2SC2068(R)
	OR Q66090	2SC2068(0)
CAPACITORS		
C601	CCHFK561	CERAMIC,560PF,+-10%,50V
C602	CCHFK561	CERAMIC,560PF,+-10%,50V
	OR CCHFK561	CERAMIC,560PF,+-10%,50V
C611	CCHFK561	CERAMIC,560PF,+-10%,50V
C612	CCHFK561	CERAMIC,560PF,+-10%,50V
C613	CCSAD3R0	CERAMIC,3PF,+-0.5PF,500V
C622	CCHFK561	CERAMIC,560PF,+-10%,50V
C631	CN9RJ103	POLYPROPYLENE,0.01MF,+-5%,1600V
	OR CNZDJ103	POLYPROPYLENE,0.01MF,+-5%,2KV
RESISTORS		
R601	RFACJ151	CARBON,150 OHM,+-5%,1/4W
R602	RR2FJ123	OXIDE METALIZED,12K OHM,+-5%,2W
R603	RCBPK332	SOLID,3300 OHM,+-10%,1/2W
R604	RFACJ151	CARBON,150 OHM,+-5%,1/4W
R605	RFACJ152	CARBON,1500 OHM,+-5%,1/4W
R611	RFACJ151	CARBON,150 OHM,+-5%,1/4W
R612	RR2FJ123	OXIDE METALIZED,12K OHM,+-5%,2W
R613	RCBPK332	SOLID,3300 OHM,+-10%,1/2W
R615	RFACJ152	CARBON,1500 OHM,+-5%,1/4W
R621	RFACJ151	CARBON,150 OHM,+-5%,1/4W
R622	RR2FJ123	OXIDE METALIZED,12K OHM,+-5%,2W
R623	RCBPK332	SOLID,3300 OHM,+-10%,1/2W
R625	RFACJ152	CARBON,1500 OHM,+-5%,1/4W
R631	RCBPK274	SOLID,270K OHM,+-10%,1/2W

Ref. No.	Part No.	Description
VARIABLE RESISTORS		
VR601	G1115XGB	5K OHM, B
	OR G1115XGH	5K OHM, B
	OR G1115XGM	5K OHM, B
VR611	G1115XRM	5K OHM, B
	OR G1115XRH	5K OHM, B
	OR G1115XRB	5K OHM, B
VR612	G1126XXB	300 OHM, B
	OR G1126XXH	300 OHM, B
	OR G1126XXM	300 OHM, B
VR621	G1115XBM	5K OHM, B
	OR G1115XBB	5K OHM, B
	OR G1115XBH	5K OHM, B
VR622	G1126XXH	300 OHM, B
	OR G1126XXM	300 OHM, B
	OR G1126XXB	300 OHM, B
COILS		
L631	L4058	INDUCTOR, 18UH
MISCELLANEOUS		
S601	E3286A	CRT SOCKET
W1A	E3160	TERMINAL SOCKET FOR FOCUS BLOCK
W1B	361411	HOLDER, LEAD WIRE
W2A	E3160	TERMINAL SOCKET FOR FOCUS BLOCK
W2B	361411	HOLDER, LEAD WIRE
U880701A (PUSH TUNING BOARD B2JA-A)		
CAPACITORS		
C701	CCHJZ103	CERAMIC,0.01MF,+80%-20%,50V
	OR CCHJP103	CERAMIC,0.01MF,+100%-0%,50V
RESISTORS		
R701	RR2FJ822	OXIDE METALIZED,8200 OHM,+-5%,2W
VARIABLE RESISTORS		
VR701-VR7	G0241A	100K OHM, B, WITH BAND SWITCH
MISCELLANEOUS		
D701	Q7175	LA5630
	OR Q7103	UPC574J, ZENER, 33V
SW701-SW7	E26004	PUSH SWITCH
SW713	E26013A	AFT SWITCH

Ref. No.	Part No.	Description
U880702 (HEADPHONE BOARD B2JA)		
RESISTORS		
R1102	RFACJ121	CARBON,120 OHM,+-5%,1/4W
MISCELLANEOUS		
S1101	E3314	HEADPHONE SOCKET
U860049 (POWER BOARD B2LA)		
CAPACITORS		
C1302	CCQYM151	CERAMIC,150PF,+-20%,400V
COILS		
⚠ L1302	L328	LINE FILTER
MISCELLANEOUS		
⚠ F1301	E5045	FUSE, 2A, AC
F1301A	E5740	FUSE CLIP
F1301B	E5740	FUSE CLIP
U830004 (DEFLECTION SUB BOARD B2LA)		
C12	CFHRJ393	MYLAR FILM,0.039MF,+–5%,50V
	OR CFHSJ393	MYLAR FILM,0.039MF,+-5%,50V
C13	CFHSJ223	MYLAR FILM,0.022MF,+-5%,50V
	OR CFHRJ223	MYLAR FILM,0.022MF,+-5%,50V
C4001	CFMBJ564	MYLAR FILM,0.56MF,+-5%,250V
C4002	CFMBJ564	MYLAR FILM,0.56MF,+-5%,250V
C4003	CEIEA101	ELECTROLYTIC,100MF,100V
C4004	C7208	ELECTROLYTIC,47MF,160V
RESISTORS		
R11	RFACJ822	CARBON,8200 OHM,+-5%,1/4W
R12	RFACJ563	CARBON,56K OHM,+-5%,1/4W
R4001	RYCZJ120	WIRE WOUND,12 OHM,+-5%,10W
R4003	RFBPJ121	CARBON,120 OHM,+-5%,1/2W
R4004	RFACJ333	CARBON,33K OHM,+-5%,1/4W
COILS		
L4001	L4032	INDUCTOR, 6.8MH
L4002	L4090	INDUCTOR, 150UH

Ref. No.	Part No.	Description
DIODES		
D11	E1229R	1S2473
	OR E1324R	1S2076
	OR E1121R	1S1555
MISCELLANEOUS		
4000A	E3948	CONNECTOR, 5P
4000B	E3952	PLUG, 6P HOUSING
OUT OF CIRCUIT BOARD		
VARIABLE RESISTORS		
VR907*AUD	G2248XXT	10K OHM, B
	OR G2248XXM	10K OHM, B
COILS		
⚠ L901	L7305EON	DEGAUSSING COIL
⚠ L902	D0378XTB	DEFLECTION YOKE
PICTURE TUBE		
⚠	Q9300XTH	510VAB22
MISCELLANEOUS		
AC	E6121KB	AC POWER CORD
⚠ SW901*AC*	E2808	SWITCH
1H	E6052	HOUSING, 2P
13C	E4682	5P HOUSING PLUG
13D2	E6054	HOUSING, 4P
	U880757	AERIAL TERMINAL
	J1882D	CRT GROUNDING LEAD
	V1118	SPEAKER
	D4002B	CG PURITY MAGNET
	361649	DY SPACER


AERIAL BOARD
TUNER
PUSH TUNING BOARD B2JA- A
VIDEO AMP., VIDEO DET. AGC, AFT & SIF AMP. IC101 M51356P
VIF PRE-AMP. Q101 2SC2216
VIDEO BUFFER Q201 2SA608 or 2SA564
VIDEO & COLOUR IC201 M51393P
CRT BOARD B2WA-E
GREEN OUTPUT Q601 2SC2068
RED OUTPUT Q611 2SC2068
BLUE OUTPUT Q621 2SC2068
PICTURE TUBE 510VAB22
AUDIO AMP. IC161 LA4220
DEFLECTION SUB BOARD B2LA
HEADPHONE BOARD B2JA
HEADPHONE SOCKET
SPEAKER
SYNC.
COLOUR
SUB CONTRAST
SUB BRIGHTNESS
CONTRAST
BRIGHTNESS
VOLUME
PULSE SHAPER Q430 2SC536
VERT. OUTPUT-1 Q440 2SC2483 or 2SC2073
VERT. DRIVE Q442 2SC2229M
VERT. OUTPUT-2 Q441 2SA1195 or 2SA940
SYNC. AMP. & SEP. AFC VERT. & HORIZ. OSC VERT. DRIVE IC401 LA7800
HORIZ. DRIVE Q450 2SC2228M or 2SC2229M
HORIZ. OUTPUT Q451 2SD869
T460 FLYBACK TRANS.
L902 DEFLECTION YOKE
VERT. HOLD
VERT. CENTRE
VERT. SIZE
HORIZ. OSC
HORIZ. HOLD
HIGH VOLT. ADJ.
FOCUS
SCREEN
SCREEN & FOCUS CONTROL BLOCK
SERVICE TIP
L901 DEGAUSSING COIL
CONVERTER TRANS. T301
ERROR DET. Q301 2SC536
ERROR DRIVE-1 Q302 2SB774
ERROR DRIVE-2 Q303 2SC536
SWITCHING Q304 2SD811 or 2SC3048
ISOLATION PARTS.
POWER BOARD B2LW-A
MAIN SWITCH
SW901-A
AC FUSE F1301 T2A
L1302 LINE FILTER
AC 220V 50Hz
MAIN BOARD B2LA-A
B1 +110V
B2 +18V
B3 +180V
B4 +40V
B5 +15V
B6 +12V

SERVICE PRECAUTION:

The area enclosed by this line (– – –) is directly connected with AC Mains Voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

SANYO

COLOUR TELEVISION

80P Chassis Series

Model CTP 6123

Part No. 3403961 B2LK

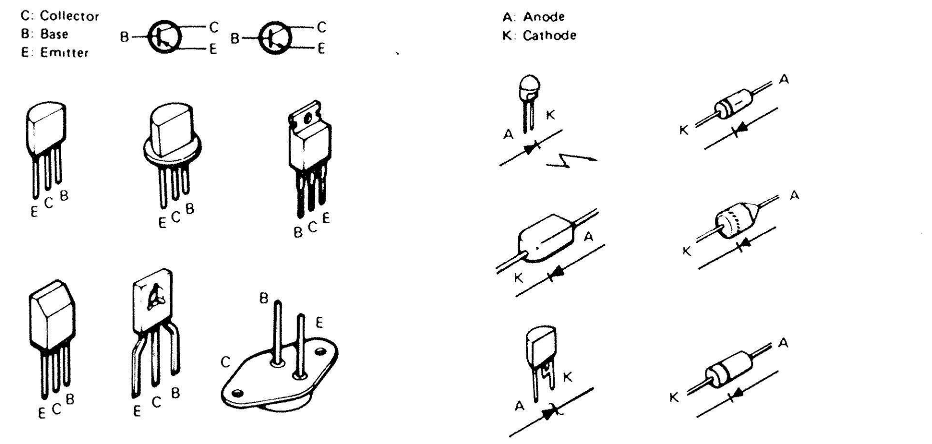
PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a mark ⚠ in this circuit diagram show components whose value have special significance to product safety. It is particularly recommended that only parts specified on the parts list of service manual be used for components replacement pointed out by the mark.

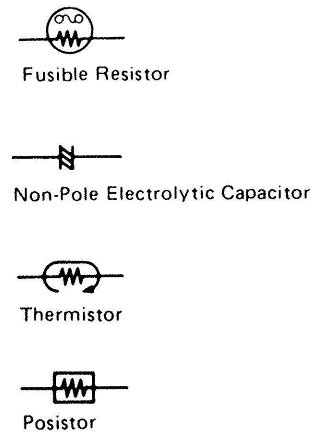
CIRCUIT DIAGRAM NOTES:

1. All resistance values in ohms K = 1,000, M = 1,000,000.
2. Unless otherwise noted in circuit diagram all capacitor values less than 1 are expressed in μF, and the values more than 1 are in pF.
3. Voltage reading taken with "VOM" from point indicated to chassis ground.
   Voltage reading taken using colour bar signal, all controls at normal, AFC switch in "OFF" position. Some voltage may vary with signal strength.
4. Waveforms were taken with colour bar signal and controls adjusted for normal picture. Waveforms were taken using a wide band oscilloscope and low capacity probe.
5. All resistance values for transformers must be measured under unwired condition.
6. This circuit diagram covers basic or representative chassis only. There may be some component or partial circuit difference between actual chassis and circuit diagram.

TRANSISTOR, DIODE & INTEGRATED CIRCUIT TERMINAL GUIDE


C: Collector
B: Base
E: Emitter
A: Anode
K: Cathode
E C B
B C E
1 (1) (1)
7 (8) (12)
(13) (9) 8
(24) (16) 14
1
9

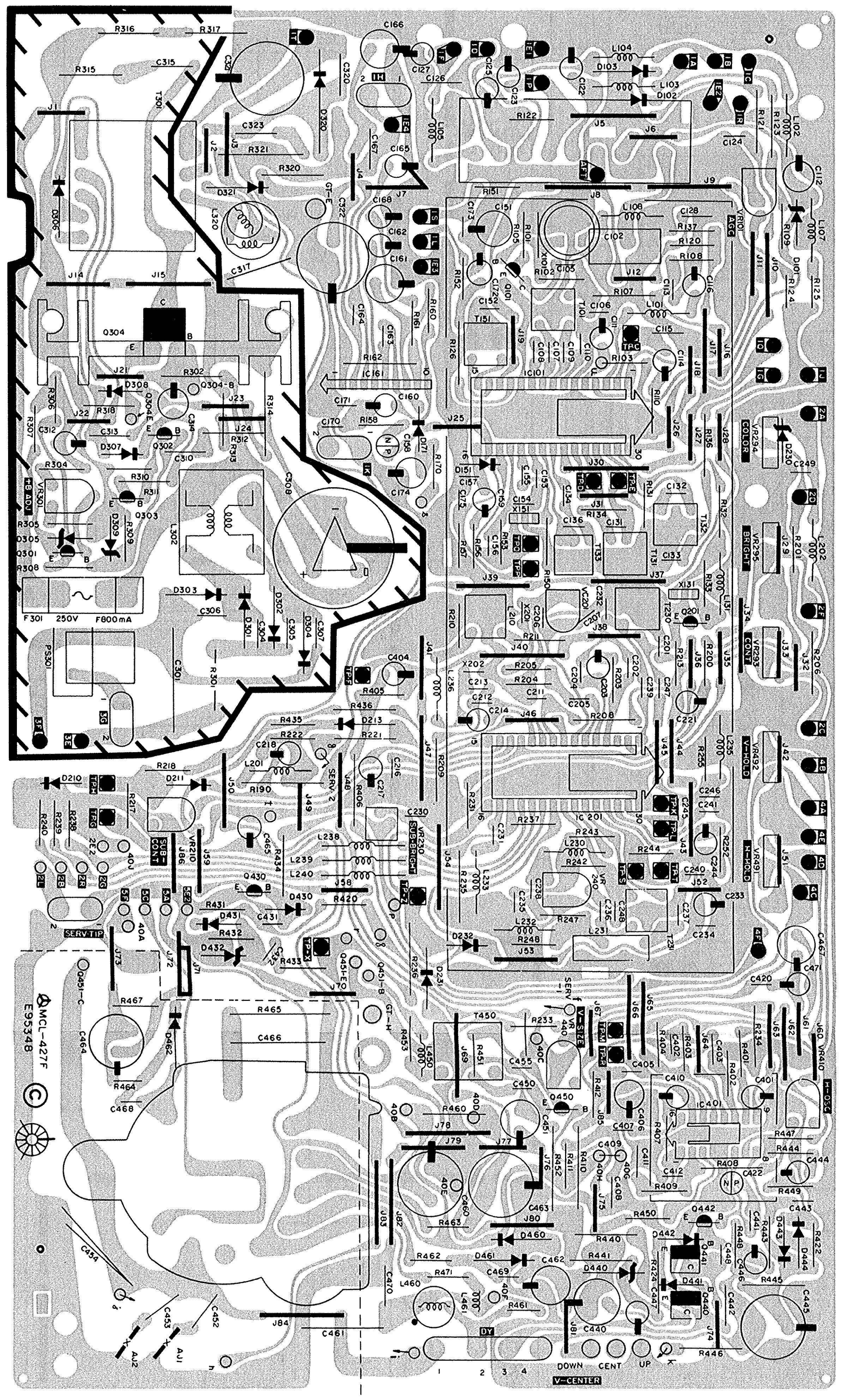
PARTICULAR PARTS SYMBOL


Fusible Resistor
Non-Pole Electrolytic Capacitor
Thermistor
Posistor

PRINTED CIRCUIT BOARD DIAGRAMS

MAIN BOARD

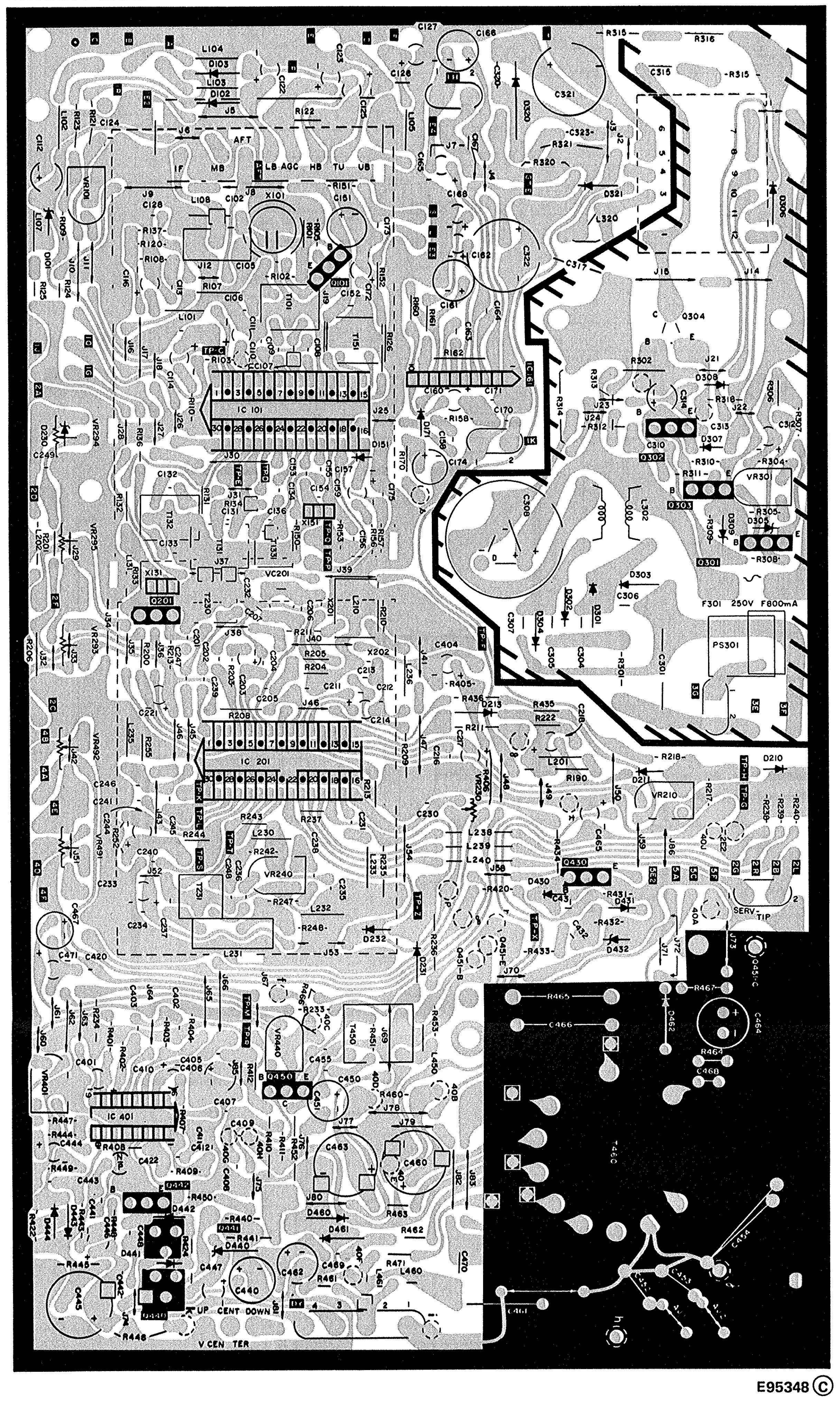
COMPONENT SIDE



F301 250V F800mA
PS301
SERV TIP
MCL-427F
E95346
V-CENTER
DOWN CENT UP
DY

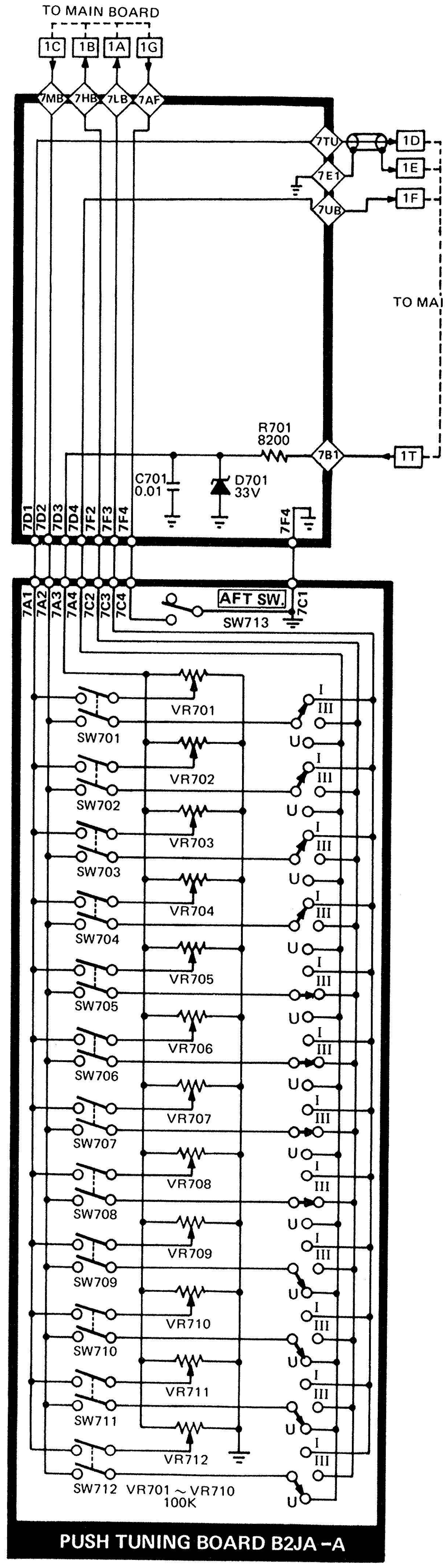
COMPONENT LOCATION DIAGRAM										
Pin		IC Q D	C			R			L T X VC	VR PS F
1D 1F 1T	1C 1B 1A			166 127		316 317			L104	
	1E1 1E2	D103	315 321	125 320 126	122	315			L103	
1H	1P 1R	D102		123			122	121 123	T301 L102	
1E4		D320	323		124				L105	
				167 165	112	321 320	151			
		D321	322	168 173					L108	
GT-E	1S			151 162	128		101 105	137 120	L303 L320	VR101
	1L	D306		161	102		152 102	106 108	L107 X101	
	1E3	D101	317		105 113			107		
		Q101		172 152 164 163	116 106 111 115		160 161	124 125	L101 T101 T151	
	1Q TP-C	Q304		108 107			126 162	103		
	1J 1G	IC161 IC101		109	110 114	302				
		D308		171		306 318				
	2A	Q304	314 312	160 170		314	158	110		
		D171 D230	313	158		307 312		136		VR294
1K TP-E TP-D		D307 Q302 D151	310	157	249 155 153	313 304	170			
	2D		308	174 175 159	134 132	310 311		131 134 132	X151	VR301
		Q303		154	136 131				T132	
	TP-Q	D309 D305		156	133	305 309	157 156 153	201	L302 T133 T131	VR295
	TP-P	Q301			232	308			L202 X131	
	2F	D303 D302					150	133	VC201 L131	
		Q201 D301 D304	306 304 305	206	207		210 211		L210 X201	F301
				307 404	201			213 200	T230	
TP-F			301	213 204 212 211	202 203 239 247	301	205 204 405	206 203	X202 L236	PS301
3G 3F 3E	2C	D213		214	205 221	435 222 221	436	208	L235	
	4B	D210		216		218	209	255	L201	VR492
TP-H	TP-K 4A	D211		217	246 245 241	190	406 231 237			
TP-G	TP-L 4E	IC201	465	230 231		240 239 238		243 244 252	L238 L230	VR230
2L 2B 2R	4D TP-S TP-T	Q430			244 240			242	L239 L240 L233	VR210 VR491 VR240
2G 5F 5C	4C	D430		238 235	233 236 248	430 431	235 434	247	L232	
5A 5E2	TP-Z 4F	D431 D232	431 432		237 234 467		420 248 433		L231 T231	
TP-X		Q451 D432 D231			471 420	432	236			
						467 465	233		T450	
	TP-M TP-R	D462	464 466	455	402 403 405		453 466 451	234 404 403 401	L450	VR440
				450	410 401			402		VR410
		Q450 IC401	468	451	406 407	464	460	412 447		
					409 411 444 412 422 408		452 411	444 410 408 409 449	T460	
		Q442 D443 D460 D442		460 463	443 441		463	450 443 440 448		
		D444 D461 Q441	454	462 469	448 446		462 471	422 441 445	L460	
		D440 D441 Q440	453 452	470	447 442 445		461		L461	
	DY			461	440			446		

CIRCUIT SIDE



IC 101
IC 201
IC 401
F301 250V F800mA
PS301
SERV TIP
V CEN TER
UP CENT DOWN

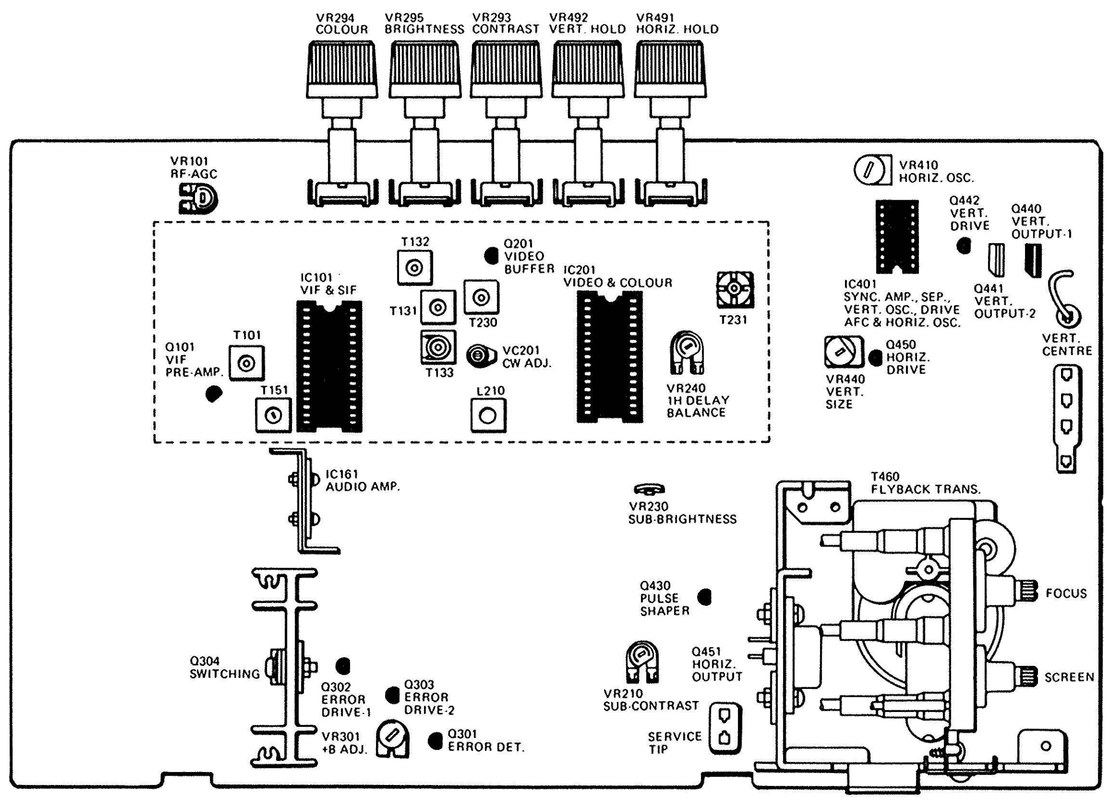
E95348 ⓒ



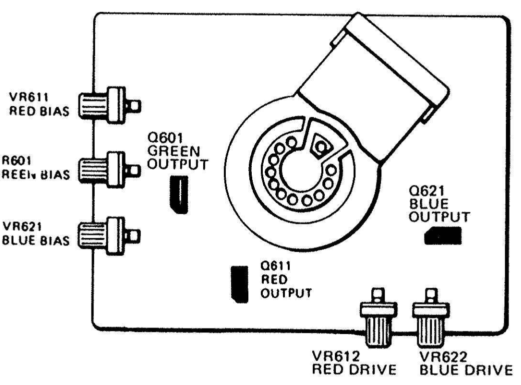
TO MAIN BOARD
1C
1B
1A
1G
7MB
7HB
7LB
7AF
7TU
7E1
7UB
1D
1E
1F
TO MAIN BOARD
R701
8200
7B1
1T
C701
0.01
D701
33V
7F4
7D1
7D2
7D3
7D4
7F2
7F3
7A1
7A2
7A3
7A4
7C2
7C4
7C1
AFT SW.
SW713
VR701
SW701
VR702
SW702
VR703
SW703
VR704
SW704
VR705
SW705
VR706
SW706
VR707
SW707
VR708
SW708
VR709
SW709
VR710
SW710
VR711
SW711
VR712
SW712
VR701 ~ VR710
100K
I
II
III
U

PUSH TUNING BOARD B2JA -A

COMPONENT LOCATION



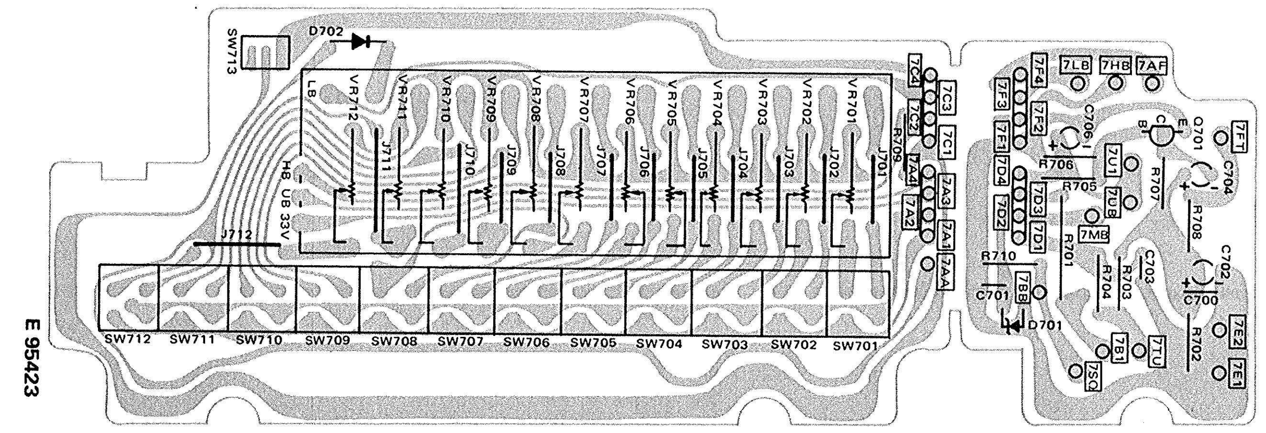
VR294
COLOUR
VR295
BRIGHTNESS
VR293
CONTRAST
VR492
VERT. HOLD
VR491
HORIZ. HOLD
VR101
RF-AGC
VR410
HORIZ. OSC.
Q442
VERT.
DRIVE
Q440
VERT.
OUTPUT-1
T132
Q201
VIDEO
BUFFER
IC201
VIDEO & COLOUR
IC101
VIF & SIF
T131
T230
T231
IC401
SYNC. AMP., SEP.,
VERT. OSC., DRIVE
AFC & HORIZ. OSC.
Q441
VERT.
OUTPUT-2
Q101
VIF
PRE-AMP.
T101
T133
VC201
CW ADJ.
VR240
1H DELAY
BALANCE
Q450
HORIZ.
DRIVE
VERT.
CENTRE
VR440
VERT.
SIZE
T151
L210
IC161
AUDIO AMP.
T460
FLYBACK TRANS.
VR230
SUB-BRIGHTNESS
Q430
PULSE
SHAPER
FOCUS
Q304
SWITCHING
Q302
ERROR
DRIVE-1
Q303
ERROR
DRIVE-2
Q451
HORIZ.
OUTPUT
VR210
SUB-CONTRAST
SCREEN
VR301
+B ADJ.
Q301
ERROR DET.
SERVICE
TIP



VR611
RED BIAS
Q601
GREEN
OUTPUT
VR601
GREEN BIAS
Q621
BLUE
OUTPUT
VR621
BLUE BIAS
Q611
RED
OUTPUT
VR612
RED DRIVE
VR622
BLUE DRIVE

PUSH TUNING BOARD

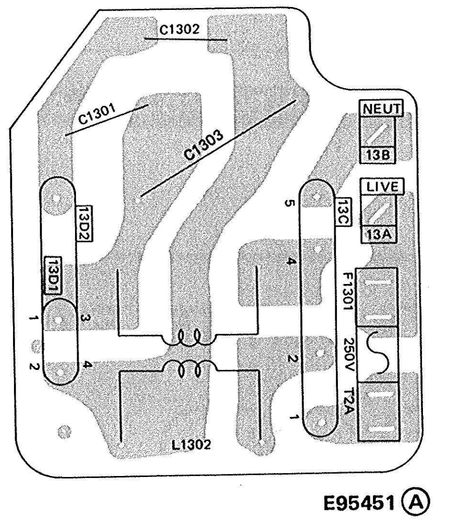
CIRCUIT SIDE



SW713
D702
E 95423
SW712
SW711
SW710
SW709
SW708
SW707
SW706
SW705
SW704
SW703
SW702
SW701
VR712
VR711
VR710
VR709
VR708
VR707
VR706
VR705
VR704
VR703
VR702
VR701
7LB
7HB
7AF
R701
C701
D701
R710
C700
R702
R703
R704
R705
R706
R707
R708

POWER BOARD

CIRCUIT SIDE

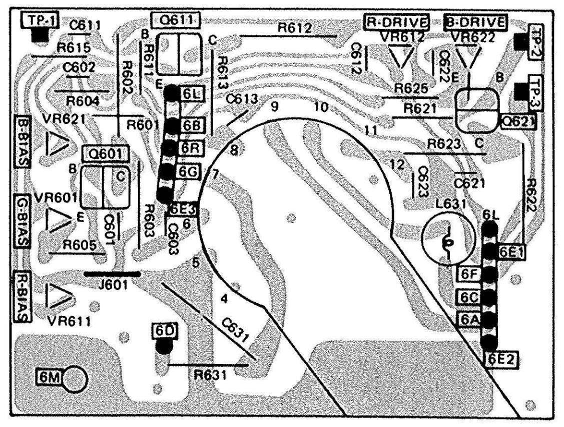


C1302
C1301
C1303
NEUT
13B
LIVE
13A
F1301
250V
T2A
L1302

E95451 Ⓐ

CRT BOARD

CIRCUIT SIDE

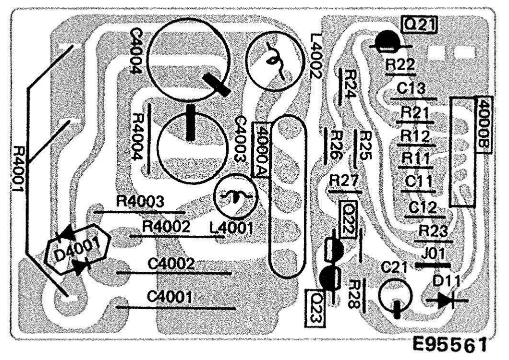


R612
R-DRIVE
B-DRIVE
R615
R602
VR612
VR622
R604
R601
C613
R626
R621
Q601
R623
C623
VR601
Q611
Q621
R603
J601
VR621
VR611
R631
6D
6M

E95314

DEFLECTION SUB BOARD

CIRCUIT SIDE

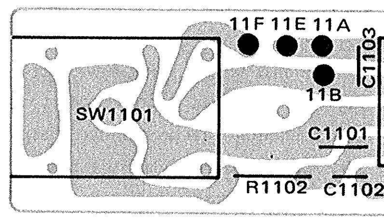


C4004
L4002
Q21
R22
C13
R21
R12
R11
C11
C12
R26
R25
R27
R4004
C4003
R4001
R4003
R4002
L4001
C4002
C4001
D4001
C21
D11
Q23
Q22
R28

E95561

HEADPHONE BOARD

CIRCUIT SIDE



11F
11E
11A
11B
C1103
SW1101
C1101
R1102
C1102
L1101

E 95368 Ⓐ